

MOTOR AGE

CHILTON PUBLICATION

JUNE 1961



ARCHITECTS OF THE AUTOMOTIVE FUTURE

Seal It Right For No Comebacks 40

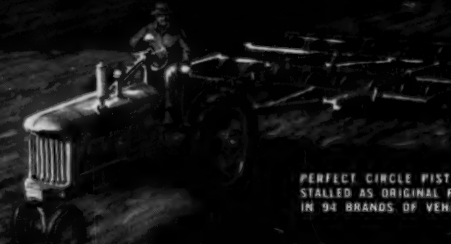
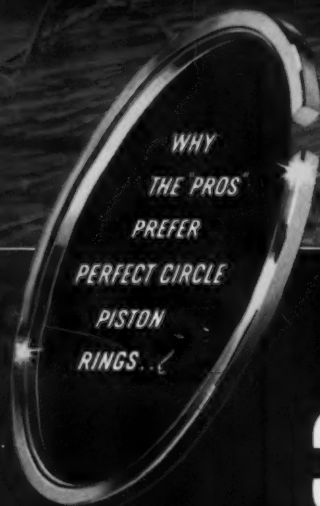
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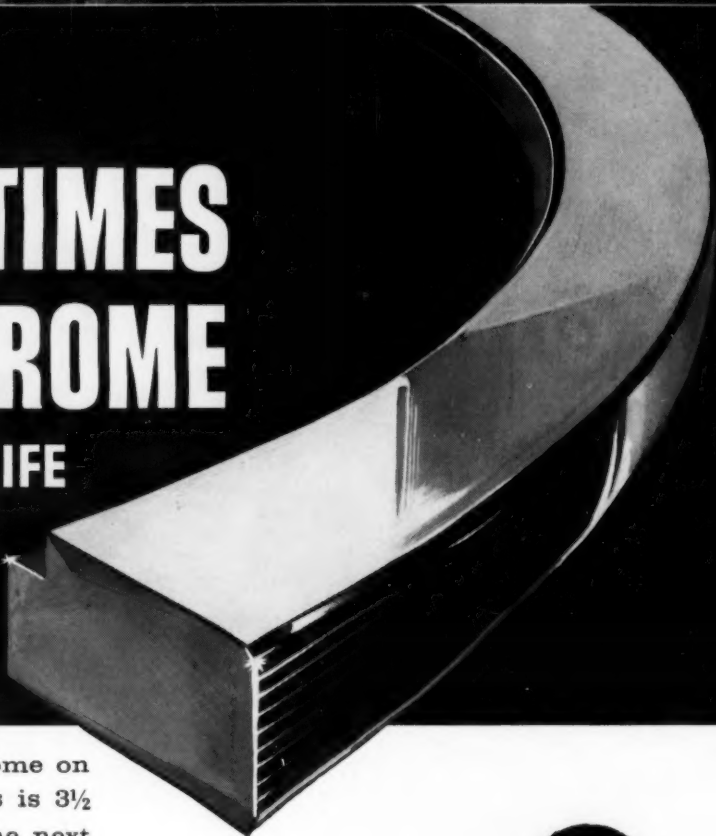
New Minimum Wage Law 78

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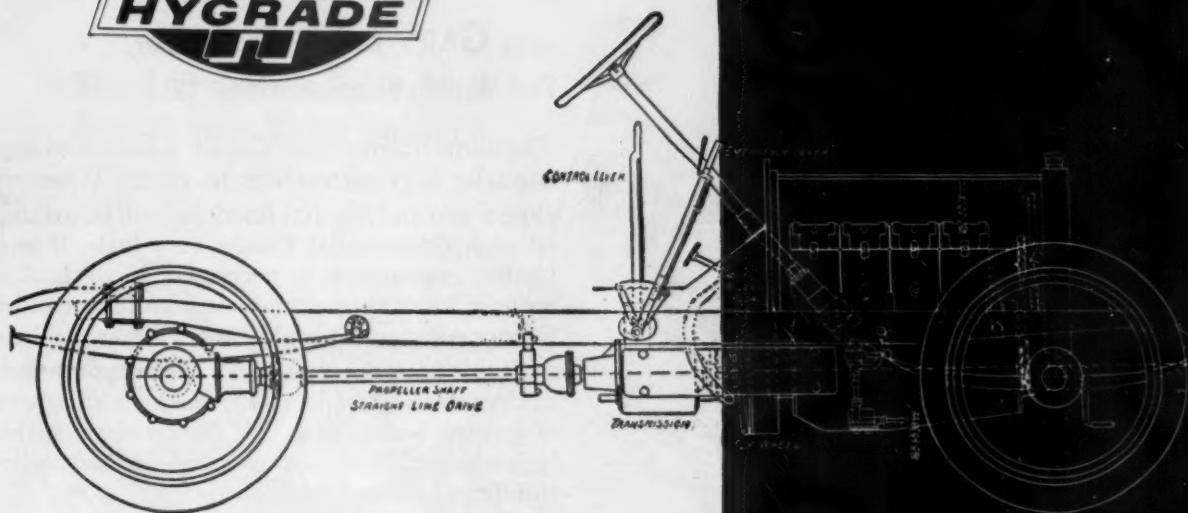
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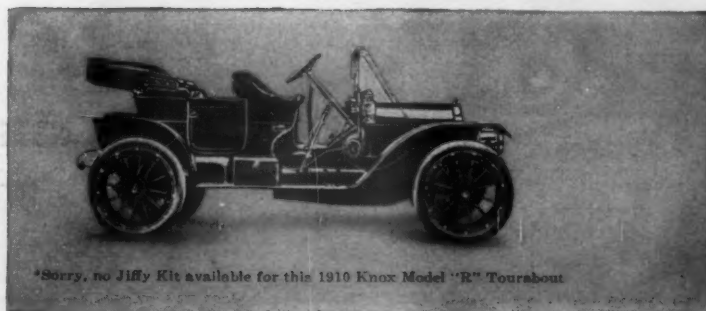


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for
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every
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FEATURES

Seal It Right For No Comeback..... 40

You can seal in profits and seal out complaints by the proper installation of the right oil or grease retainer for every job.

Alignment Done The Modern Way..... 42

One service bay and a minimum investment can get you into this profitable business.

Middle Atlantic States—Birthplace of Vehicle Inspection... 44

MOTOR AGE continues its state by state survey of periodic inspection laws. Here is a report on the Middle Atlantic States.

Let The Spark Plugs Tell The Story..... 46

Analyze the causes of spark plug failure. It's easier to replace plugs than customers.

Architects of the Automotive Future..... 49

An inside look at the cars of the future and at the men who make these dreams a reality.

Also In This Issue:

An interview with Clarence D. Martin, Under Secretary of Commerce for Transportation; Dodge's New Motor Home; A discussion of the Minimum Wage Law; and other informative features.

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Seal It Right



Modern Alignment



Vehicle Safety



Cars Of Tomorrow

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UPCOMING

A further look into the automotive future. Also, some suggestions on "How to Solve the Mechanic Shortage." Some valuable suggestions on how to increase your shop's profits with Truck Service.



MOTOR AGE. Published monthly by Chilton Company, Chestnut & 56th Sts., Philadelphia 39, Pa. Subscription price: United States, United States Possessions, \$4.00 for one year, \$7.00 for two years; Canadian, Foreign, \$5.00 per year, \$8.00 for two years; single copies 40 cents. COPYRIGHT 1961 by CHILTON COMPANY.

CAR and TRUCK shop kinks

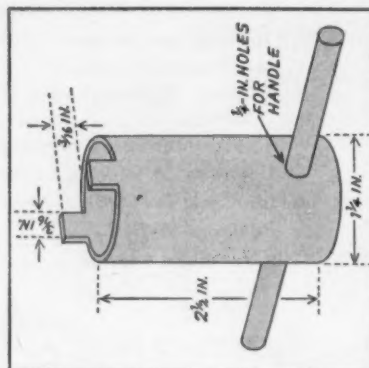
\$25 for KINK of the month \$10 paid for other KINKS

Tool For Tensioning Jaguar Timing Chain

Ralph Preston, Modern Motors, 5022 Wyalusing Ave., Phila., Pa.

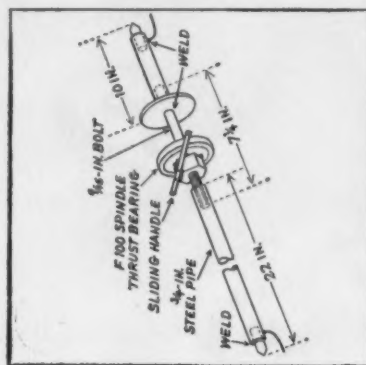
Kink of the Month

105. Your article on Jaguar valves in April was very informative. I've a wrench which works well for tensioning the timing chain. It is made out of a piece of 1 1/4 in. outside diam. steel pipe. (See illustration). In addition it allows you to insert a socket wrench thru the tool for loosening or tightening the adjuster lock nut.



Spreader For Removing Transmission Crossmember On Fords
Wally Streibick, Adams Auto Sales, Lewiston, Ida.

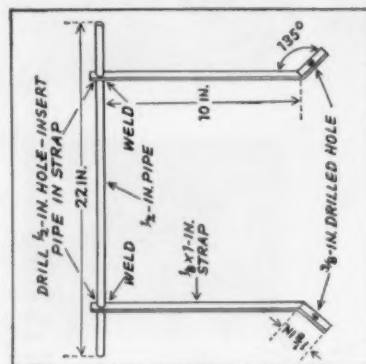
106. This tool is for spreading the frame on the '57 and '59 Fords which will let the crossmember slide into place. It will work on either the standard transmission or the automatic transmissions. It was made up from using odds and ends around the shop.



Handy Tool For Lifting Off Ford Intake Manifolds

Andrew Foglia, c/o Neil Motor Co., Woodland, Wash.

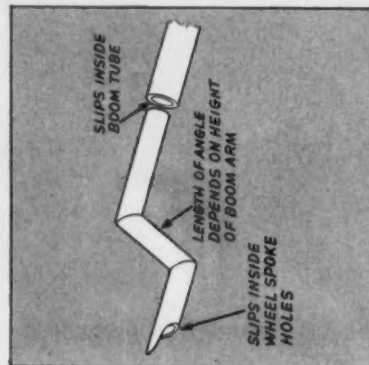
107. This tool is used to remove intake manifolds on 332 and 352 cu. in. Ford engines. After everything is disconnected and the manifold is ready to come off, place the tool in two center holes from where the valve cover is bolted on, (there are five of them, use the upper center hole on each side). The mechanic can now, by straddling the engine, easily remove the manifold.



Shopmade Lift To Handle Truck Wheels

Melvin E. Lingard, 820 Hughes Place, Madison 5, Wisc.

108. Here is an extension for use in conjunction with a boom type shop lift to be used for lifting wheel and hubs off of trucks. I made this from round pipe just small enough to fit inside the lift boom. Using it saves seals and all the lifting and tugging on these heavy assemblies.



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SPM-92 contains four 8-Pacs for these cars

84TS*	Edsel, 1958-60; Ford, 1958-61; Lincoln, 1958-61; Mercury, 1958-61
85T	Edsel, 1959-60; Ford, 1955-57; Lincoln, 1955; Mercury, 1955-56



ACs are specifically engineered to give every make of car the exclusive "Hot Tip" for self-cleaning action.

44S*	Buick, 1959-61; Chrysler, 1959-61; DeSoto, 1959-61; Dodge, 1959-61; Plymouth, 1960-61
R44S**	Chrysler, 1957-58; DeSoto, 1957-58; Dodge, 1957-59; Plymouth, 1957-59

*Extended shell type

**Extended shell resistor type

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OF THE MONTH !

FOR DEALERS

AC

VALUE No. 1



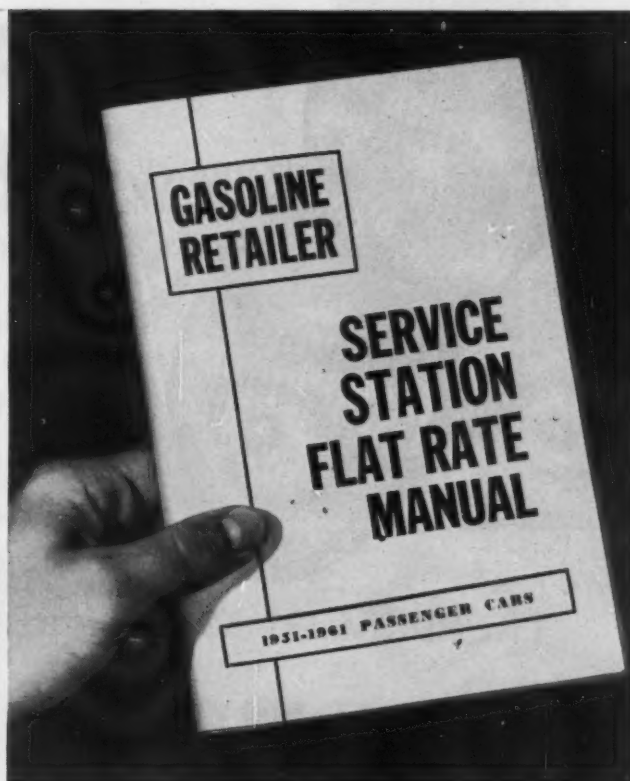
Provides an extra customer service—that will gain more business.



AC AIR-OPERATED VACUUM CLEANER

Just add a one-half inch male threaded quick-coupler and it easily and quickly fits onto regular air hose. Ideal for cleaning out customers' cars. Puts the finishing touches on car washes. Has 1001 uses around your place of business. Long 18" suction tube allows you to clean hard to get at places easily. Bag is of heavy-duty vacuum cleaner cloth with zippered opening for easy dirt removal. A special handle valve turns the vacuum cleaner on or off.

VALUE No. 2



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5 TYPE T3-6006 • 5 TYPE T3-6012**

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FOR DEALERS



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From left to right: Milton Cross, the "Voice of Opera" — and announcer for Texaco's Metropolitan Opera Broadcasts; Chet Huntley, famous newscaster of the Texaco Huntley-Brinkley Report; Marion J. Epley, Jr.,

Senior Vice President of Texaco Inc., at the luncheon meeting of the Radio and Television Executives Society of New York, April 18, 1961—when presentations were made of the highly coveted Peabody Awards.

Texaco News and Opera programs win Peabody Awards!

BOTH the Texaco Huntley-Brinkley Report (TV) and Texaco's Metropolitan Opera Broadcasts (radio) receive the coveted George Foster Peabody Awards! This is the first time that two regularly-scheduled programs, sponsored by the same organization, have been winners in the same year.

Chet Huntley, shown above, accepts the Peabody Award for the best television news program of 1960. Mr. Epley of Texaco accepts the Peabody Award for the Texaco-Metropolitan Opera Radio

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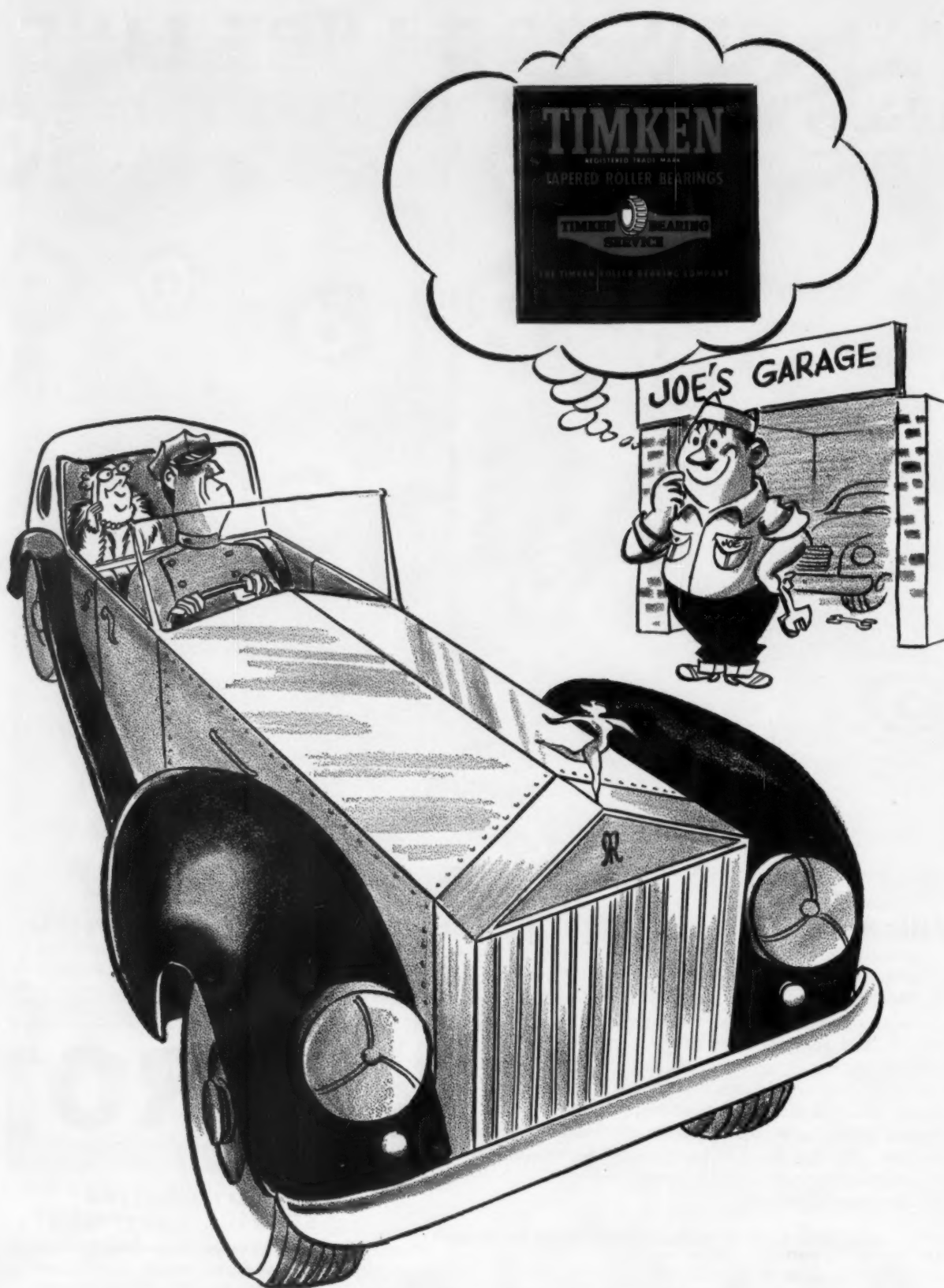


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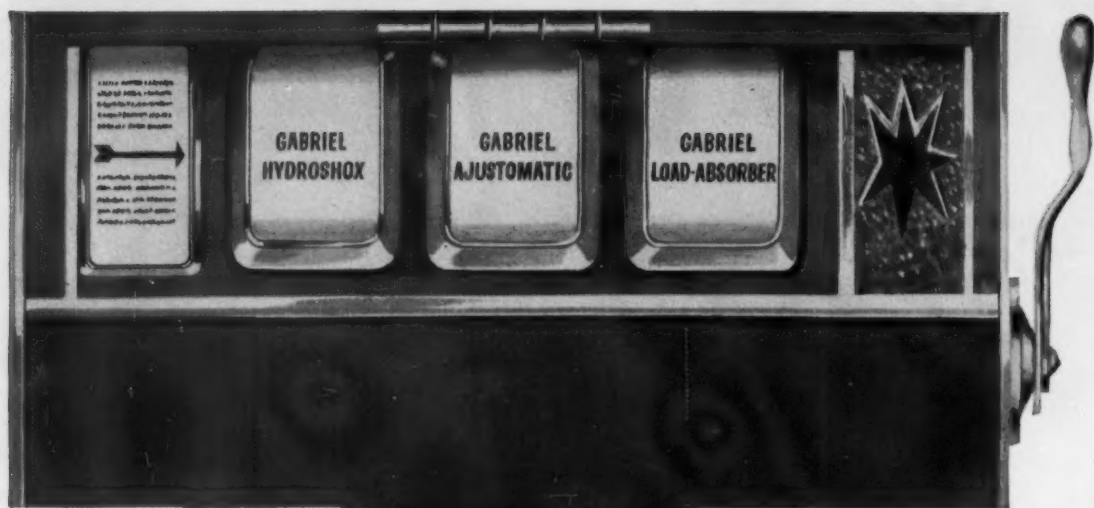
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MoPar Parts and Accessories, Chrysler Motors Corporation, Detroit 31, Michigan

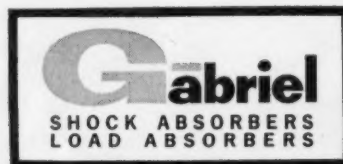


**Every
day more
and more
dealers are
hitting the
jackpot with
Gabriel!**

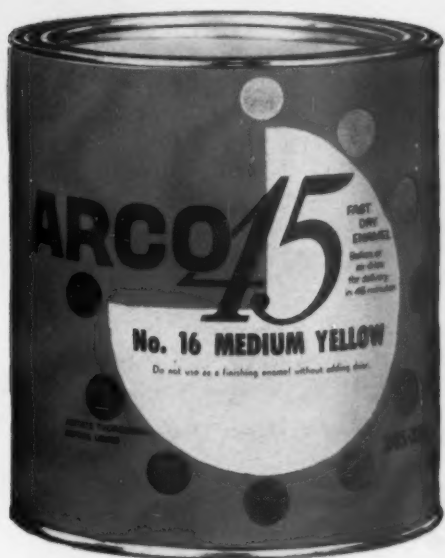
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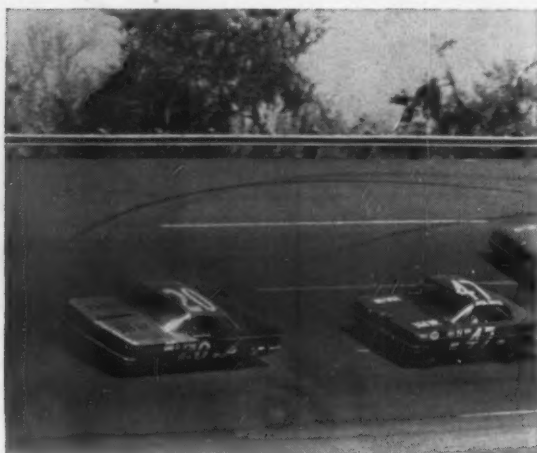
Here's another reason for always installing Champion spark plugs!

Champion-sparked cars sweep

It's more proof of Champion's outstanding performance and dependability . . . from the steeply banked Daytona Speedway where cars can charge full-throttle even through the turns — setting a pounding, punishing pace that's a supreme test of cars, engines, and the plugs that spark them! Here are the facts on Daytona — and what they mean to you and your customers . . .



Joe Weatherly (No. 8) leads the field as he wins the second 100-mile race, piloting his Champion-sparked Pontiac to a new record time of 152.671 mph! Right behind, in car No. 20, is Panch, who later won the "500."



Winning the fastest 500-mile race ever run in America, Marvin Panch roars to Daytona "500" victory in his Champion-sparked Pontiac (No. 20). Panch's average speed for the full 500 miles was a record-shattering 149.601 mph!

Racing records fell like rain during Daytona Speed Weeks as Champion-sparked cars finished 1-2-3 in every single Grand National race for late-model American stock cars. The big Daytona "500" was won in record time by Marvin Panch. Joe Weatherly set a new 100-mile mark to win one of two 100-mile Grand National races, while Fireball Roberts, who set a new track top-speed record, won the other. All with Champions!

The cars that led the pack in these races were "set up" by some of America's top stock-car racing mechanics. Given a free choice of spark plug brands by NASCAR rules, in every case these "performance pros" chose *Champions!* They know from experience that—no matter how demanding the driving—you can always depend on Champions for peak performance. And the results proved it again!

Of course, it's not just racing that proves the superiority of Champion-sparked performance. Countless billions of miles on turnpikes, highways, side roads and city streets have proved it to the engine experts who build the world's cars. That's why so many of the world's car manufacturers install Champion spark plugs. They, too, know that you can't beat Champions for dependable performance.

And dependable performance is what your customers want. And what they get—when you recommend and install *Champion* spark plugs!

America's favorite—

CHAMPION

SPARK PLUGS

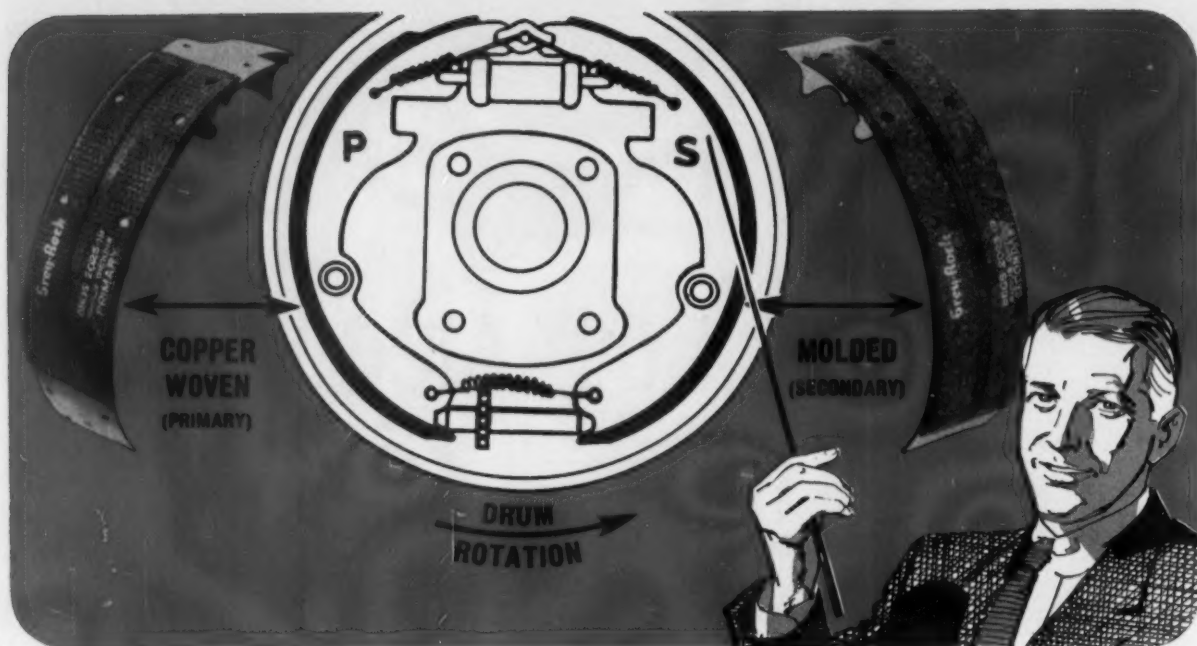


CHAMPION SPARK PLUG COMPANY • TOLEDO 1, OHIO

every late-model stock car race at Daytona!

Fireball Roberts leads the pack through the pace lap of the first 100-mile race. His Champion-fired Pontiac (first row, right) also led over the finish line. Roberts set a new qualification record of 155.709 mph for 10 miles!





Why Grey-Rock Balanced Braksets?

Because they're *necessary* for full stopping power—long lining life!

The popular Bendix Brake operates in such a way that the secondary shoe does about twice the work of the primary shoe. In forward motion, the hydraulic wheel cylinder forces the primary or "clutch" shoe against the rotating drum which carries the shoe with it. Torque is transmitted through the star-wheel adjuster, forcing the secondary shoe against the revolving drum and anchor post. This force, plus the energizing force of the drum, makes the secondary shoe work about twice as hard as the primary shoe. Much of the total stopping power, however, depends on how well the primary shoe does its job. If primary shoe friction is low or unstable—or fades under high brake tempera-

ture—the servo-action is lost and the secondary shoe will not do its job. The result is dangerous loss of brake, or hard pedal.

To equalize the braking effort, two different lining materials are needed. In many sets for Bendix brakes Grey-Rock uses its new Copper-Woven lining to provide the necessary friction at the primary shoe. The lining is woven of long-fiber asbestos for high friction and long wear. Copper wire—an excellent heat conductor—is interwoven with the asbestos to carry excess heat away from the braking surface, into the metal shoe, where it is dissipated.

The secondary lining is also custom

designed to carry its extra-heavy load. It is molded with high-quality asbestos and special heat-resistant resins under extreme pressure for slow, even wear.

The resulting combination of linings in each wheel is the Grey-Rock Balanced Brakset. It assures your customers of safe, smooth stops every time and longest possible lining life. Add to this Grey-Rock's powerful national advertising that brings prospects *to you*—and the tested P-L-S® plan (Pull-Look-Show) that uncovers brake work. Together, they can make brake work your easiest and most profitable service. Grey-Rock Division of Raybestos-Manhattan, Inc., Manheim, Pa.

Only Grey-Rock® makes BALANCED BRAKSET LININGS
BALANCED BRAKSETS • TRUCKSETS • BRAKE BLOCKS • VEE-LOK® CLUTCH FACINGS • AUTOMATIC TRANSMISSION PARTS

You Can't Buy a Better Brake Lining to Save Your customer's Life

Light, handy Size 402 with $\frac{3}{8}$ " Drive is smallest pistol grip Air Impacttool on market, and one of the most valuable in any shop.



I-R WATCHMAKER ACCURACY ...gives more power on less air!

- **Built-In Air Control.** No external regulator. Adjustable trigger stop and air-balanced throttle valve provide full power range with complete control.
- **6-Vane Air Motor.** Compare a "six" with a "four" . . . you get greater power, smoother operation, higher starting torque.
- **Sealed Nose Bumper.** Exclusive I-R rubber guard seals out dirt in addition to protecting impact mechanism.
- **"2-Pack" Construction.** Either the impact mechanism "pack" or the motor "pack" can be serviced individually.
- **Electronic Precision.** Special electronic equipment double-checks machined surfaces for perfect mating.

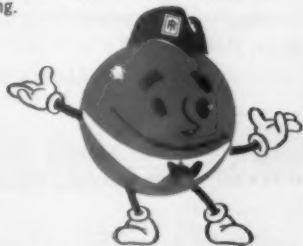
"Watchmaker accuracy" is the secret of Ingersoll-Rand's maximum power—minimum air consumption design. The cylinder is made with a ground lap to minimize air leakage past rotor. This "area" seal (rather than a "line" seal) means all air entering an I-R tool generates power . . . another red

● ball extra for top operation efficiency and long, trouble-free life.

*best design—biggest line
look for the red ● ball extras*

Ingersoll-Rand

11 Broadway, New York 4, N. Y.



1
AIR
SERVICE
Gauge—
Inflate

2
REPAIR
SERVICE
Tire—
Tube—
Valve—

3
NEW TIRE-NEW VALVE
SERVICE

Introducing
Schrader's 3-way tire
business builder:

TIRE-LIFE EXTENSION

Schrader Gauges

Schrader Repair Products

Schrader Valves, Caps and Cores

THESE ARE THE GENUINE SCHRADER PRODUCTS THAT CAN MAKE TIRE-LIFE EXTENSION A PROFITABLE PART OF YOUR DAILY PROCEDURES

3 practices that can organize your tire service into a business building profit maker

Get your full share of the tire business. Schrader's new Tire-Life Extension Plan is the service policy that makes you the authority on tire performance—the man to see for new tires and all your services.

Just follow these three simple, profitable practices:

1. Gauge and inflate tires accurately.
2. Make tire, tube and valve repairs with dependable, quality products.
3. Install new Schrader valves with Swivel-T cores whenever you install new tubeless tires.

Start the Schrader Tire-Life Extension Plan now. Your supplier has everything you need for all three services. Ask him.

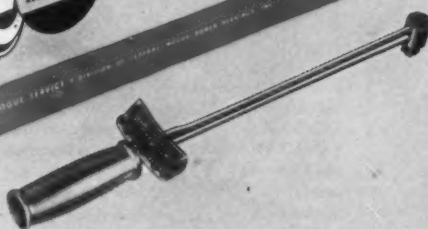


A. SCHRADER'S SON • BROOKLYN 38, N. Y.
Division of Scovill Manufacturing Company, Incorporated

FIRST NAME IN TIRE VALVES
FOR ORIGINAL EQUIPMENT AND REPLACEMENT

Made in America to American standards of quality by American craftsmen

REPACK FRONT WHEELS NOW!



Service Sam brings you . . .

Bigger bearing sales and better bearing service—in one complete package

There are two things you need for profitable wheel bearing business—selling tools and service tools. The complete Bower-BCA wheel bearing cabinet has them both.

Bower roller bearings and BCA ball bearings can't be beat for operating efficiency and long life. There's a basic stock in the cabinet that puts you right in the profitable wheel bearing business. And no matter what type or size replacements you need, you can depend on fast delivery. Included with the complete package is a chrome-plated Bower-BCA wheel bearing torque wrench.

The handsome metal cabinet is built to hold your stock of bearings. On display in your service area it serves as an eye-catcher that reminds customers to order wheel bearing packs and replacements. Attractive window posters, decals, easy to use application sheets and a price card complete the all-purpose package.

Get your share of the profitable wheel bearing service by being prepared with the necessary tools. Call your Bower-BCA jobber and place your order today.

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN





Why foam means fade—All shock absorbers, including the new improved Columbus, cushion road shock by using a valved piston acting against a column of fluid. If the piston meets only light fluffy foam, instead of vastly more resistant fluid, control turns to mush. A hop, skip and jump ride results.

BUT IN A SHOCK ABSORBER
FOAM MEANS **FADE**



get the BIG DIFFERENCE—get...

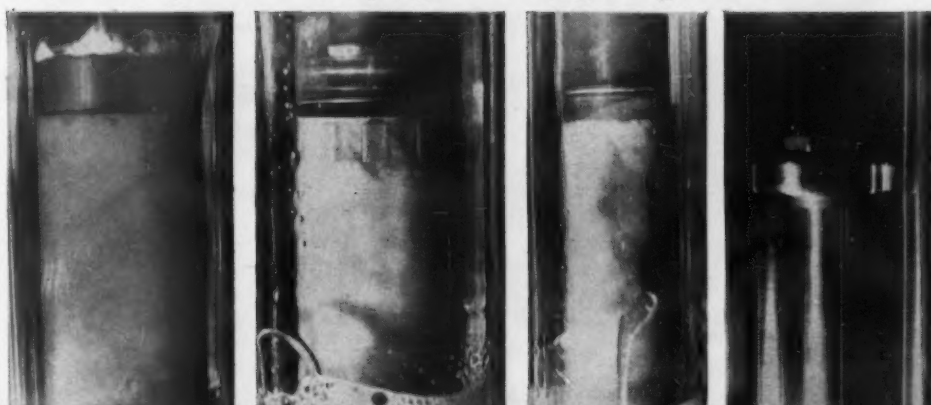
BRAND "A"
(Premium Duty)

BRAND "B"
(Heavy Duty)

BRAND "C"
(Regular Duty)

COLUMBUS

At right are unretouched high-speed photographs of actual shocks* under identical laboratory tests duplicating road conditions. Substitution of clear plastic shells shows that in all three other brands the fluid turned to foam. Only Columbus provided foam-free full-time control.



SEE HOW ORDINARY SHOCKS FOAM, FADE, LOSE CONTROL

only **COLUMBUS** *full-time* shock absorbers **FIGHT FOAM ALL WAYS**

Ordinary shocks foam, fade, lose control—Ordinary shocks have an air reserve at the bottom and sides of the fluid-filled working chamber. Each up stroke of the piston sucks air into this fluid, causing foam. And mounting this fluid chamber to the road-pounding wheels shakes all the fluid all the time—means more lost control.

Why Columbus gives full-time control—Only patented Columbus has the air reserve above the fluid—keeps fluid and air apart so they can't mix. Only Columbus mounts "heads-up"—with the fluid chamber on the smooth-riding frame, not the bouncing wheels. And Columbus' exclusive design fights foam in other important ways too!

Columbus bigger piston assures full-time control—With COLUMBUS, the much larger working chamber permits a much larger piston. This in turn allows larger, more sensitive piston valving which gives COLUMBUS shocks truly progressive, double-acting control for all road and load conditions.

Up to now, an oversize piston has meant premium price for premium performance. But regular-priced Columbus Luxury-ride shocks give you a larger piston than any shock available, with the exception of the super-priced shock of one competitor.

Even the economy priced Columbus Velvet-ride has a bigger piston than most regular priced ordinary shocks. Give your customers premium quality at regular price with Columbus! Register with your wholesaler as a Columbus Shock Specialist today!

*Shocks used were purchased on the open market in June of 1960.

Competitive Piston



Velvet-ride



Luxury ride



Velvet-ride
Luxury-ride
Level-ride

FULL-TIME COLUMBUS SHOCK ABSORBERS
LICENSED BY DE CARBON

THE COLUMBUS PARTS CORP., DEPT. 103 • 1801 SPIELBUSCH AVE., TOLEDO 1, OHIO / A SUBSIDIARY OF THE AP PARTS CORP.



Wheel Cylinders have 'dog days', too!

when the heat is on...
**EIS Wheel Cylinders stand up
 because they're equipped with
 'E' Series HRC* Cups,
 Expanders and Springs!**

Smaller drums and faster braking create high temperature conditions that shorten wheel cylinder life. Beat the heat by installing EIS Wheel Cylinders with the built-in "E" Series *HEAT-RESISTANT-COMPOUND Cups! These specially formulated EIS Cups provide a positive, longer-lasting seal. And, for extra insurance, the Expanders and Springs provide just the right pressure needed at the point of contact between cups and cylinder wall. Every EIS Wheel Cylinder has this extra safety factor... and it doesn't cost a penny extra!



"E" Series *HRC Cups with Expanders and Springs are also available in Shop-Size Cabinet Assortments and in Standard-Ten-Paks. Use them in **ALL** your brake work... they work better!



* Highly efficient at -40°F., too!

The new, EIS Catalog Supplement 30H-11 is ready. Make sure you get your copy because it includes a complete, up-to-date listing of 1961 Model applications.



Write for catalog

EIS AUTOMOTIVE CORP., Middletown, Conn.

Now Du Pont Telar[®] ANTI-FREEZE AND SUMMER COOLANT

has a new low price...only \$3.95* A GALLON



"Telar" is now only \$3.95 a gallon. So for '61 "Telar" becomes the premium anti-freeze product at a new low price... a price that's going to have more of your customers asking for "Telar". Think of it! The proven, long-lasting anti-freeze, anti-

rust and summer coolant that can be used year after year, summer and winter... that you can sell with confidence to all of your customers... for just a little more per gallon than standard anti-freezes you install.

Be ready to go both ways... sell ZEREX and TELAR

ZEREX[®] anti-freeze with MR-8 rust inhibitor... finest permanent type anti-freeze.



TELAR[®] anti-freeze and summer coolant protects year after year.



BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

*Fair Trade price in those states where applicable.

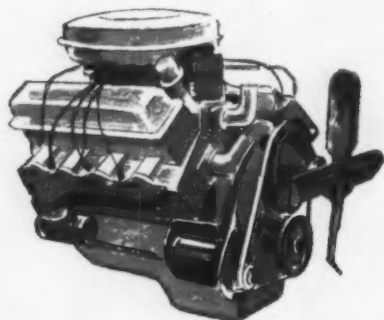
Here are the facts that will help



"Telar" is installed just like you've been installing "Zerex" all these years, quickly and without fuss. "Telar" is not a difficult-to-handle full-fill product—no need to waste space stocking water. "Telar" and tap water in the proper proportions make the best anti-freeze, anti-rust and summer coolant on the market. And the amount of "Telar" your customer needs is *exactly the same* as the amount of "Zerex" you would install.



"Telar" does its work effectively year after year, winter and summer. The "Telar" you put in now will protect your customer's cooling system for as long as he keeps his car (requiring only occasional make-up). That's because Du Pont spent years of research in developing a rust inhibitor so effective it lasts year in, year out. This long-lasting protection, plus new low price, will make "Telar" appealing to many more of your customers.



"Telar" is recommended for cars with aluminum engines. Years of research have proven that "Telar" completely protects the aluminum now used in many car engines. Same goes for *all* other metals in the cooling system . . . copper, iron, steel, etc. "Telar" is a modern product for modern cars. You can recommend it with confidence to all of your customers.



"Telar" is effective as a summer rust inhibitor and coolant, too. Many anti-rusts on the market today do not protect as well as "Telar" in the summer—when the threat of rust and corrosion is greatest. With "Telar" in the cooling system, there is complete protection from rust and corrosion. And "Telar" has a higher boiling point than water. Many dealers got a jump on the anti-freeze season last year—by recommending and installing "Telar" in July and August, before the first-freeze rush.

Be ready to go both ways . . . sell ZEREX and TELAR

ZEREX® anti-freeze
with MR-8 rust inhibitor
... finest permanent type
anti-freeze.



TELAR® anti-freeze and
summer coolant protects
year after year.



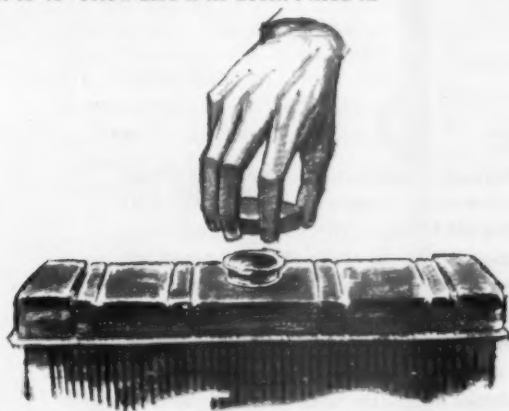
you sell Telar[®] in 1961

ANTI-FREEZE AND
SUMMER COOLANT

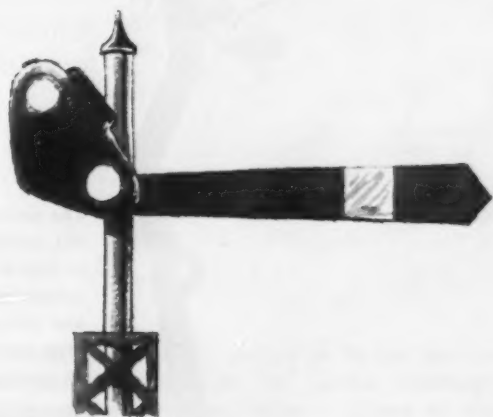


At only \$3.95 a gallon, "Telar" is now the most economical long-lasting anti-freeze, anti-rust and summer coolant money can buy. If your customer plans to keep his car for more than one winter, the cost for protection with "Telar" can average out to dollars less than the cost of two fills with one-year anti-freezes. And remember . . . with "Telar" your customer buys only the anti-freeze protection he needs. No need to protect to 40° below zero if he doesn't need it.

"Telar" is sold through servicing dealers. Again this year, like last, you'll find "Telar" where it belongs—in service stations, garages and car dealerships. At \$3.95 a gallon, there's a lot of profit in selling "Telar"—and that profit is yours exclusively.



There's profitable make-up business for you with "Telar". Under normal driving conditions, a certain amount of loss through leakage and overflow is unavoidable with any anti-freeze. So once in a while, you'll find that your customer's radiator needs some make-up. In the summer you can add plain water; in fall and winter you'll add some "Telar". You build up a steady, repeat business that's fast and profitable.



Color Check is an added safeguard! Du Pont has proven that the super rust inhibitor in "Telar" can be expected to outlast your customer's car. To be sure he will have complete anti-rust protection at all times, a Color Check feature was added to assure him the rust inhibitor is continually doing its job. "Telar" is the first anti-freeze with such a safety feature. If "Telar" turns from normal red to yellow (and this rarely happens), the solution should be replaced, because it is no longer fighting rust, even though it may still be giving anti-freeze protection.

IMPORTANT NOTE TO DEALERS: You'll probably never have a customer whose "Telar" turns yellow. But if you should, you replace it immediately with the amount initially installed. Then return to Du Pont the installation certificate issued to the customer at the time of initial installation. Du Pont will immediately replace your stock with the amount of "Telar" you replaced. **IMPORTANT:** Du Pont, of course, does not take responsibility for loss of "Telar" from any cause, such as leakage, overflow, etc.

Complete details for replacement of any "Telar" which has turned yellow, along with original installation certificate for your customer, will be found in the Du Pont point-of-sale Dealer Kit.



REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

a new
rubber valve
cover gasket
achievement

new **FEL-CoPRENE**®

GUARANTEED
to reduce
installation time
to fit better—to seal better
to out-last and out-perform
any conventional
type gasket!

The secret of the extra resilient, longer lasting performance of new FEL-CoPRENE is the exclusive rubber formula developed by FEL-PRO in conjunction with leading car factories. This special composition rubber maintains its shape and sealing ability at higher pressures and temperatures better than conventional types. Its extra resiliency compensates for expansion—gives better conformability for all surfaces. New FEL-CoPRENE saves on installation time, too. It goes on faster because it fits right every time. FEL-CoPRENE is only available for a limited number of models right now, but you'll be able to get FEL-CoPRENE for most popular late models in the near future. Ask your FEL-PRO Jobber for the facts or write for samples and literature to: Felt Products Mfg. Co., Skokie, Ill. Since 1918.

FEL-PRO **gaskets**

specifically designed
with your profit
uppermost in mind!

R-910R Copyright 1960, Felt Products Mfg. Co.

JOBBER EXECUTIVE EDITION

Motivation Of Wholesaler Salesman

A summary of ideas and opinions brought out at the 2nd Annual Business Conference of the A.S.I.A. Young Executives Forum

IT is very important that the wholesaler salesman know what is expected of him—what potential there lies in his territory—what profit to him—the characteristics of products—and mostly the feeling that management is on his side and understands his needs.

A comment was made that sometimes the over-all quota for a wholesaler salesman may seem too much for him at a glance and has a tendency to "Scare him." Instead, break down the quota by calls, which seems to the salesman to be more realistic and within his range of success in closing.

Another wholesaler reported great success with their company's three-day "Sales Workshop," held once a year during the slump months. An agenda is prepared, refreshments provided, and working material that is needed. All salesmen participate, as well as department heads and executive personnel. The salesmen act as critics, with management moderating the discussion. Everything is gone over—invoice system, order forms, methods of credit and collection, daily and weekly reports, purchasing, territories,

assistance from factory personnel, etc. This firm has found its "Sales Workshops" to be an excellent motivating factor with their salesmen and has greatly improved the team spirit of the entire company.

A different approach was made by another wholesaler who commented that occasionally they take one of their countermen and let him call on the really tough accounts that the outside salesman has trouble selling—or even an "unsaleable prospect." They have found that since the counterman goes forth without a pre-determined defeatist attitude about the prospect, he often comes home with a sizeable order.

A quick survey was made among those present asking

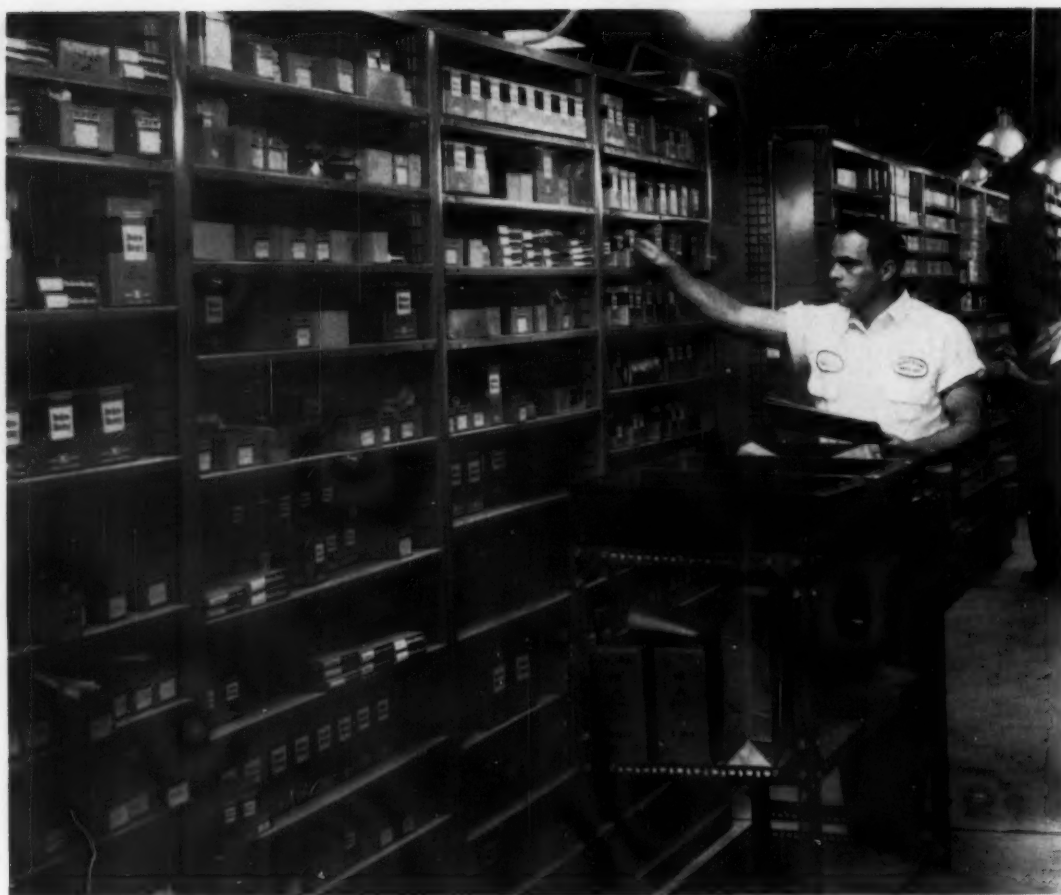
what seemed to be the best incentive for jobber salesmen: money, trips or prizes. It was evenly divided among these. Another survey showed that 30 per cent of the wholesalers keep a record of sales made with factory representatives.

A manufacturer pointed out that the best incentive is a "Sales Performance Chart" showing how each salesman fares during the month. Any salesman worth his salt wants to see his name near the top of the chart—thus, a good incentive appealing to his pride.

Many wholesalers have the top-producing salesmen work with the low-producing ones. Others conduct contests among their sales organization—in

Continued on page V





How to Improve your Stock Turnover

Your dollars will work harder for you if you increase the rate of stock turnover

INCREASING the rate of stock turnover in your business is one of the keys to higher profits. You will make more profit per dollar invested in stock if you get a faster turnover of your parts and accessories.

Calculate Your Current Turnover Rate

Before you can make plans to improve your rate of stock turnover, you will need to know your current rate. Check your profit and loss statement



and substitute your own figures in this illustration:

Sales		\$100,000
Beginning Inventory	\$20,000	
Purchases	\$85,000	
	<u>105,000</u>	
Ending Inventory	<u>30,000</u>	
Cost of Goods Sold	75,000	75,000
Gross Profit		<u>25,000</u>

First, you determine your average inventory. In this illustration you add the beginning inventory (\$20,000) and the ending inventory (\$30,000) together. This total (\$50,000) is divided by 2 for an average inventory of \$25,000.

You will have a more accurate average inventory figure if you use more than the first of the year and the end of the year inventory figures. Book inventories for the first of each month plus the end of the year inventory added together and divided by thirteen will give you a better picture of your average stock.

Second, divide your average inventory into your cost of goods sold. For instance, in this illustration you divide \$25,000 (average inventory) into \$75,000 (cost of goods sold) for a rate of stock turnover of 3.

If your inventory figures are based on the retail valuation, you would divide your average *retail* inventory into your sales. However, using your profit and loss statement for your figure facts, your inventories are at cost instead of retail. Therefore, you use the cost of goods sold to determine your stock turnover rate.

How to Increase Your Stock Turnover Rate

There are two basic methods you can employ to increase your rate of stock turnover:

1. Increase your sales and keep your average inventory the same.
2. Decrease your average inventory and keep your sales the same. For instance, IF your sales increased to \$200,000 your cost of goods sold would be \$150,000 in this illustration if other factors remained constant. This figure divided by the *same* average inventory of \$25,000 would give you a stock turnover rate of 6 instead of 3.

Or, IF you could reduce your average inventory to \$15,000 and maintain the same level of sales your turnover rate would increase to 5. Divide the \$15,000 average inventory into the \$75,000 cost of goods sold for a higher stock turnover rate of 5.

How to Improve Stock Turnover Rate

The word IF was used in each of the theoretical ways of increasing your rate of stock turnover. These are important consideration and must be tempered with the practical merchandising approach.

Sales can be increased when you maintain an adequate assortment, but a wide assortment may tend to increase your average inventory. Thus, your sales increase, your inventory increases and your stock turnover rate remains the same.

Lost sales can develop when you do not have a deep enough stock. Maintaining plenty of stock will increase your average inventory, increase sales and tend to hold the line on the rate of stock turnover.

One very practical solution for reducing your

Continued on page VI

THE PULSE

OF

AUTOMOTIVE BUSINESS

Automotive Wholesaler's Sales and Inventories

Data from the Bureau of the Census, Dept. of Commerce

Region	Per Cent Change in				
	Sales			Inventories	
	Mar. 1961 from Mar. 1960	Mar. 1961 from Feb. 1961	3 Mos. from 3 Mos. 1960	Mar. 1961 from Mar. 1960	Mar. 1961 from Feb. 1961
New England.....	0	+3	+2	...	-1
Middle Atlantic.....	+8	+21	+6	-3	-1
East North Central.....	-7	+18	-5	+4	0
West North Central.....	+1	+6	0	0	+5
South Atlantic.....	+12	+19	+8	+3	+2
East South Central.....	+2	+20	+2	-3	-4
West South Central.....	+8	-2	+3	-18	-3
Mountain.....	-17	+2	-6	...	+1
Pacific.....	-3	+18	-3	-5	+1
United States.....	0	+15	+1	-1	+2

Monthly Sales of Automotive Jobbers incl., Tire and Tube Wholesalers*

All Data Are in Millions of Dollars

Month	1961	1960†	Per Cent Change
Jan.....	\$ 428	\$ 403	+9.36
Feb.....	401	415	-3.38
Mar.....	462	462	None
Apr.....	...	...	...
May.....	...	...	...
June.....	...	...	...
July.....	...	...	...
Aug.....	...	...	...
Sept.....	...	...	...
Oct.....	...	...	...
Nov.....	...	...	...
Dec.....	...	...	...
Total—12 Months..	...	...	...
Total—3 Months...	\$ 1,291	\$ 1,280	+0.86

Monthly Sales of Franchised Car Dealers*

All Data Are in Millions of Dollars

Month	1961	1960†	Per Cent Change
Jan.....	\$ 2,241	\$ 2,578	-13.07
Feb.....	2,154	2,670	-19.14
Mar.....	2,682	3,039	-11.75
Apr.....	...	3,119	...
May.....	...	3,054	...
June.....	...	3,015	...
July.....	...	2,468	...
Aug.....	...	2,616	...
Sept.....	...	2,324	...
Oct.....	...	2,688	...
Nov.....	...	2,833	...
Dec.....	...	2,437	...
Total—12 Months..	...	\$32,701	...
Total—3 Months...	\$ 7,077	\$ 8,287	-14.60

Monthly Sales of Gasoline Service Stations*

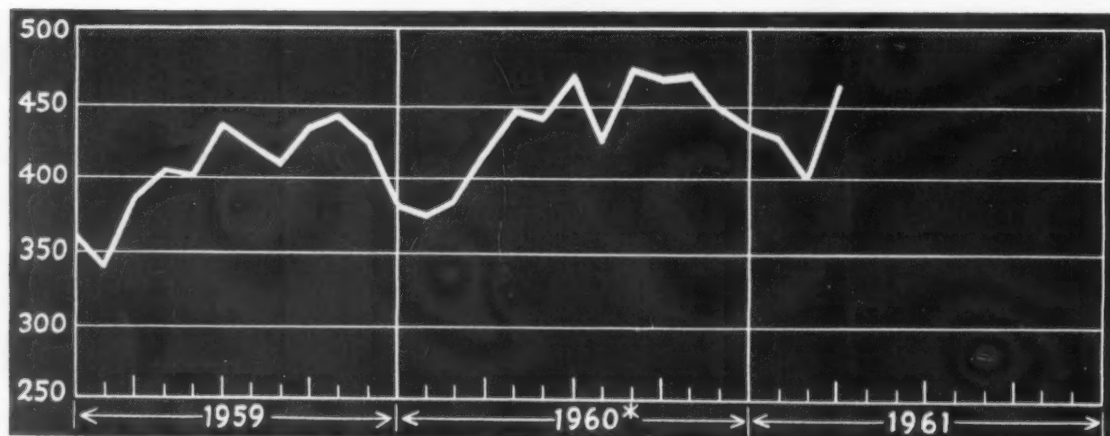
All Data Are in Millions of Dollars

Month	1961	1960†	Per Cent Change
Jan.....	\$ 1,381	\$ 1,356	+1.84
Feb.....	1,262	1,285	-0.23
Mar.....	1,423	1,387	+2.60
Apr.....	...	1,457	...
May.....	...	1,489	...
June.....	...	1,524	...
July.....	...	1,587	...
Aug.....	...	1,568	...
Sept.....	...	1,470	...
Oct.....	...	1,505	...
Nov.....	...	1,455	...
Dec.....	...	1,511	...
Total—12 Months..	...	\$17,594	...
Total—3 Months...	\$ 4,086	\$ 4,028	+1.44

* Estimated by the Bureau of the Census. † Subject to revision due to new sample.

MONTHLY SALES OF AUTOMOTIVE WHOLESALERS— INCLUDING TIRE AND TUBE WHOLESALERS

(All Data in Millions of Dollars)



* 1960 data are subject to revision due to a new sample based on 1958 Census of Business.

Motivation of Salesman . . Continued from page I

cluding countermen—where a top producer “teams up” with a low producer. This provides a “rub-off” benefit where the salesman with less ability picks up sound selling techniques from his “partner.”

Although there were the usual complaints from wholesalers who did not like occasionally having their salesmen “train” the manufacturer’s representative—and, conversely, the complaint from manufacturers who did not like it when the jobber salesman considers his visit a time to “gold brick”—both segments of the industry represented at the meeting agreed that these instances are growing more rare as dictated by hard selling and competitive factors.

A wholesaler commented that when a factory “rep” works with his men, he wants the “rep” and jobber salesman to work on the tough accounts—not the easy ones. The manufacturer should know everything about his product and be able to impart that knowledge to the jobber salesman.

Another wholesaler feels that having the factory man work

with the salesman does not mean it is a free day. Management wants the team to call on potential customers—with the “rep” making the pitch on the first call, with the jobber salesman listening—and, thereafter, the salesman making the pitch on all subsequent calls, with the “rep” acting only as an adviser.

A manufacturer commented that each year they conduct a “Performance Inventory” where wholesalers are invited to analyze the manufacturer’s salesmen on points of character and ability. This provides a rub-off feature where the good and desirable points of the manufacturer’s “reps” are considered by other “reps” needing help.

A wholesaler commented that they have a schedule whereby each of their salesmen know two weeks in advance when and with what “rep” they will work. No quota is set on the calls.

The manufacturer’s “rep” should be interested in imparting knowledge of his product to the jobber salesmen. He should not be interested primarily in the sales of the product.

are plagued by the same problems in acquiring capital that face all small business firms, and that passage of the bills would be a real boon.

Perfect Circle to Purchase Schellens True Corporation

Agreement on the acquisition of Schellens True Corporation, of Ivoryton, Connecticut, by Perfect Circle Corporation, Hagerstown, Indiana, has been announced by W. E. Prosser, president of Perfect Circle, and E. L. Schellens, president of Schellens True.



INDUSTRY MEETINGS

June 15-17—IGO of California Annual Convention, El Dorado Hotel, Sacramento, Calif.

June 25-27—Automotive Wholesalers Assn. of Alabama, Inc., Convention, “400” Motel, Pensacola Beach, Fla.

June 28-July 1—IGOA Annual Convention, Lowry Hotel, St. Paul, Minn.

July 23-25—Automotive Wholesaler Trade Assn. Executives Meeting, Brown Suburban Hotel, Louisville, Ky.

July 23-28—National Congress of Petroleum Retailers, Inc., 15th Annual Session, Cosmopolitan Hotel, Denver, Colo.

Aug. 4-5—IGO of South Carolina, Inc. 2nd Annual Convention, Jack Tar Hotel, Greenville, S.C.

Aug. 13-15—Kentucky Automotive Wholesalers Assn. Convention, Lexington, Ky.

Aug. 18-20—IGO of North Carolina Annual Convention, Sir Walter Hotel, Raleigh, N.C.

Sept. 13—American Petroleum Institute Div. of Marketing, Lubrication Committee Meeting, Traymore Hotel, Atlantic City, N.J.

Sept. 13-15—National Petroleum Assn. Annual Meeting, Traymore Hotel, Atlantic City N.J.

Oct. 11-14—Automotive Wholesalers of Texas Convention and Booth Conference, Granada Hotel, San Antonio, Texas.

Oct. 16-17—National Automotive Parts Assn. National Business Conference, Denver Hilton Hotel, Denver, Colo.

Oct. 30-Nov. 2—Automotive Warehouse Distributors Assn. Convention, Muehlebach Hotel, Kansas City, Mo.

Nov. 8-10—Automotive Parts Builders Assn. Convention & Trade Show, Hotel Biltmore, Los Angeles, Calif.

Continued on page VII

ASIA Backs Tax-Credit Plan

The Automotive Service Industry Association is supporting the Administration’s proposals aimed at alleviating the difficulty experienced by small business in obtaining the capital necessary for growth in an expanding economy by means of tax deductions.

ASIA spokesmen went on record in Washington, recently as favoring the Ikard-Curtis-Sparkman bills which are aimed at providing this needed assistance. Their testimony indicated that makers of automotive parts

Newsettes

"Simply Say Delco"

United Motors Service, Division of General Motors Corporation, has announced that it will merchandise all of its automotive replacement parts under the name United Delco.

In making the announcement William M. Walker, Jr., General Manager, said, "The use of the name Delco in conjunction with each division's regular name will enable us for the first time to distribute our products under one unified image and still retain each product's individuality. This will enable us to more effectively support the sales efforts of our many wholesalers throughout the country and allow their customers to easily recognize our broad family of parts lines."



The appointment of Drex D. Minshall as Vice President, Marketing, has been announced by the Perfect Circle Corporation, Hagerstown, Indiana. Minshall, who assumed his new position June 1, is also a Director of the Automotive Service Industry Association and a member of the Advisory Council of the Independent Garage Owners. In his newly created position, he will be concerned with all domestic marketing and sales activities of the company.

Marquette Corporation Acquires Heyer

The Marquette Corporation, Minneapolis, has announced the purchase of Heyer Industries, Incorporated, Belleville, New Jersey, Heyer Products Company, Heyer Service Company, and several affiliated companies.

In making the purchase announcement, Marquette President, H. J. Lange, called the Heyer acquisition a "logical and exciting step into Marquette's future as a leading manufacturer of automotive service equipment."

Back To School For ASIA Wholesalers

The University of Dallas (Texas) was the scene of a week long Sales Management Institute conducted by the University and the Automotive Service Industry Association early in April.



Arthur (Red) Motley, left, President of the Chamber of Commerce of the United States, presents an Award of Merit to the Automotive Electric Association. The award, based on AEA's achievements in providing its members with business management aids, catalogs, technical service information and educational and training programs is received by J. Howard Reed, Executive Secretary, and Ray B. Roberts, Director of AEA.

Stock Turnover

Continued from page III

inventory is to *eliminate old stock*. These deep-freeze dollars can be put to work for you when you liquidate old stock with markdowns, special sales promotion efforts, and extra sales incentives.

Odds and ends of stock tend to keep the average inventory at a high level. Your rate of stock turnover tends to increase when you *eliminate odds and ends*.

You can either buy more stock to make a complete assortment of these odds and ends to help you increase sales. Or, you can eliminate them entirely to reduce your average inventory.

There is an often overlooked method of maintaining sales and reducing the average inventory. This is buying in *smaller quantities more frequently*. With this plan you have new fresh stock all the time, keep old stock at an absolute minimum, and do not accumulate odds and ends. Sales will usually increase when this merchandising plan is adopted.

One profit pitfall of the frequent small order plan is that your purchases will cost you more money. Quantity discounts may be lost. Transportation charges may increase. Paper work (ordering, checking and marking stock, and paying invoices) will increase and may put the cost out of line with anticipated profits.

Increasing the rate of stock turnover is not the only key to increased profits. But, if you control all other elements and increase your stock turnover rate your profit picture will improve.

TRW Adds Modern Office and Warehouse

Thompson - Ramo - Wooldridge, Inc. announced recently an agreement to purchase a 55-acre tract in Independence, a Cleveland suburb, for a new \$3,000,000 master warehouse and headquarters for its automotive replacement parts division.

AP Expands its Muffler Making to Canada.

The AP Parts Corporation of Toledo, Ohio recently announced that it is expanding its muffler manufacturing operations into Canada with the construction of a new plant near Toronto, Ontario.

The new muffler plant is now under construction at Rexdale, a Toronto suburb, as an addition to the Miracle Products Company, Ltd., a subsidiary of the AP Parts Corporation. Production is expected to start the middle of the year.

Grey-Rock to Offer Complete Brake Parts Line

The introduction of a complete line of hydraulic brakes

parts is scheduled for August 1, 1961 by the Grey-Rock Division of Raybestos-Manhattan, Inc.

The move will enable Grey-Rock to supply a one-stop, one-source line of brake parts for all makes and models of cars.

The company feels that the program will offer many advantages to their dealers.

E.T.I. Visits Black and Decker Plants

Some 75 delegates and technical representatives of the Electric Tool Institute visited the plants of the Black and Decker Manufacturing Company recently. The program, arranged by J. A. Proven, executive manager of E.T.I., included tours of Black and Decker's electric tool plants and discussion meetings.



Final plans for the Sixth National Convention of the Independent Garage Owners of America are discussed by, (left to right) Bill McNaughton, McNaughton Auto Service; Don Maxam, Executive Secretary, I.G.O. of Minnesota; and Ray Sweeden, Auto Body Rebuilders. The Convention will be held at the Lowry Hotel, St. Paul, Minnesota, June 28-July 1, 1961.



The first full-scale meeting of the Joint Operating Committee for the 1962 International Automotive Service Industries Show was held in Chicago recently with Victor B. Day (seated fourth from left), president and treasurer of Bear Manufacturing Company, presiding as chairman. The theme-slogan approved by the JOC for the 1962 Show is: SEE ALL THAT'S NEW IN '62!

Industry Meetings

Continued from page V

Nov. 16-18—Virginia Automotive Wholesalers Assn. Convention, Hotel Roanoke, Roanoke, Va.

Nov. 16-19—California Automotive Wholesalers Assn. Convention, Catamaran and Babia Motels, Mission Bay, San Diego, Calif.

Nov. 27-30—National Automotive Parts Assn. Annual Meeting, Drake Hotel, Chicago, Ill.

Jan. 19-21, 1962—Ohio Automotive Wholesalers Assn.—Booster Convention and Booth Show, The Neil House, Columbus, Ohio.

Feb. 3-7—National Automobile Dealers' Assn. Convention & Exhibition, Convention Hall, Atlantic City, N.J.

Feb. 28-Mar. 3—International Automotive Service Industries Show, Navy Pier, Chicago, Ill.
Mar. 22-25—Pacific Automotive Show, Memorial Coliseum, Portland, Ore.

Apr. 29-May 2—National Automotive Parts Assn. Spring Meeting, Boca Raton Hotel, Boca Raton, Fla.

Nov. 26-29—National Automotive Parts Assn. Annual Meeting, Drake Hotel, Chicago, Ill.

College Course in Wheel Alignment and Brakes

More than 650 men from all parts of the nation and from Mexico, Central America and Canada have attended the week-long short courses in automotive front-end alignment and brake service now in their third year of operation at Ferris Institute, Big Rapids, Michigan.

The courses are sponsored by the college's Trade and Industrial Division in close cooperation with the John Bean Division of the Food Machinery and Chemical Corporation of Lansing and the Ameco Corporation of North Chicago, Illinois.

Motor Age's

WHO'S WHO

Recent Appointments

Timothy E. Griffin—as assistant manager of automotive sales of the Screw and Bolt Corporation of America.



Dennis P. Esser—as assistant to the general sales manager, Anti-Freeze Department, of Union Carbide Consumer Products Company.

Paul F. Stapula—as the general manager of Dura Corporation's newly formed general credit department.



R. A. Graser—as Kart and Kart Engine Public Relations Liaison for the McCulloch Corporation, Los Angeles, Calif.

Kenneth C. Bell—as chief spark plug engineer, and **Frank M. Kittredge** as section engineer of the Electric Autolite Company's spark plug division.

John H. Bohlig—as promotional manager in charge of Jobber Sales of the Pyroil Company, Inc.



Jack L. Roberts—as vice-president in charge of sales of the Wells Manufacturing Corporation.

Robert V. Daley—as executive vice president of the American Parts Company, a division of Gulf and Western Industries, Inc.

Thomas J. Dolan—as Chairman of the Executive Committee of the Board of Directors of the Gabriel Company.

Roy E. Lambert—as general manager of the Link-Belt Company Bearing Plant in Indianapolis, Indiana.



Charles R. Beukema, left, as Midwest representative, and **John R. Serjeant**—as Pacific Coast representative for the Muskegon Piston Ring Co.

Thomas N. Grobarz—as general sales manager of Wheels Incorporated, Clifton, N.J.

Robert M. Burch—as Electric Autolite Company's account executive supervising sales to the Ford Motor Company.

Dean W. Detweiler—as manager, Relations Services for the Perfect Circle Corporation, Hagerstown, Indiana.

Edgar C. Taelman—as treasurer of the Permatex Company, Inc.

Clay E. Buzzard—as general manager of Service Sales of Pittsburgh, Incorporated.

Christopher M. Jackson—as district manager for the Dayton Industrial Products Company, Automotive Wholesalers Division.

William M. Hempel—as manager, TBA Sales, and assistant manager, Passenger Tire Sales, for the General Tire and Rubber Co.



Robert J. "Bob" Kavanaugh—as North-Central regional field secretary for the Automotive Service Industry Association.



Edwin R. Stroh—as general sales manager—automotive and marine of Ford Motor Company's new Motorcraft Division.



Don Pettit—as mid-south area district manager for Standard Motor Products, Inc.

F. W. Maddux—as Black & Decker's industrial-automotive sales representative in New York District.

John Fielman—as national sales manager of all product lines for the Fibre Glass-Evercoat Company, Inc.



Robert C. Jacobs, assistant general manager of the Automotive Gear division of Eaton Manufacturing Company has been promoted to general manager.

MOTOR AGE

N

ewscoop

Factories Pushing Service

Changes In Parts Prices

Auto Production Up

Compacts Trade-In Value

Truck Service Volume

Chrysler Pares Expenses

Stopping Engine Failures

In the days ahead HERE'S WHAT TO LOOK FOR !!!

(Items gathered and edited by Ed Janicki, Bill Montgomery and Neil Regeimbal)

Factories Pushing Quick Service

MORE AND MORE CAR FACTORIES are exhorting their dealers to set up "quick service" stalls.... Factories don't mention words "service station" or "independent repair shop".... But a concerted move is underway to win back some of service business lost to these outlets over past few years.... Crews from practically every factory are out surveying dealerships to find out what potentials their shops have to increase service and parts volume via quick service.

"We missed the boat on the quick-service angle a long time ago," admits one service official.... It could be quite productive.... Everyone is giving it a lot of thought now. There are at least 500 items which could fall under quick service. These are items which could be handled in perhaps 30 minutes if the dealer had the right facilities for the work."

Parts "Look-alikes" Aren't Always "Cost-alikes"

WHY IS THERE SUCH A VARIATION in replacement parts prices? Many befuddled fleet buyers have often asked this question.... Two parts may look alike and yet, in many instances, a part for one vehicle may cost up to 50 per cent more than an identical-looking part for another vehicle.

There's a simple answer to this: although jobber markups on most parts are similar, it's the quality of the part that determines the ultimate price.... For example, two nuts may look exactly alike.... Yet one may be made of nylon while the other is made of plastic.... Quite a difference in quality.

Replacement sheet metal parts, such as door panels, for a Chevrolet, Ford and Plymouth may be almost the same size, weigh the same.... Yet price of one may be double that of the other.... In case of sheet metal, configuration (certain curves and dips) has a big influence on price structures.... The more complex the panel is to produce the more it costs to replace.

Neil Regeimbal's Washington Almanac

A major study of the effects of air pollution—primarily that stemming from vehicle exhaust—is underway in California. The study is termed the largest re-



Neil Regeimbal
MOTOR AGE's News
Editor, Wash., D.C.

search effort of its kind by U.S. Public Health Service officials. It is being conducted jointly by the Los Angeles County Air Pollution Control District and the University of Southern California. Public Health Service scientists say the test will give them valuable information for federal pollution control activities.

A new "administered price" investigation, which includes the auto industry, is underway in Washington. The probers want to know if prices are set by firms and not competition, and if so, whether this is related to the deteriorating export position of this country.

President Kennedy's tax plan isn't likely to be approved this year. It's stirring up lots of opposition, very little support. If it is approved in future, there'll be lots of changes. Keystone of the plan is a tax credit for a firm which invests in new equipment. Sliding scale tax credit could save a firm which had the money to spend up to 30 percent of its taxes. Opponents complain benefits would vary between firms, and could give some businesses competitive advantage.

Commerce Department Launches Travel Service

SERVICE DEALERS MAY GET A PICK-UP in sales when Department of Commerce's new travel service moves into high gear.... Plan is to promote interest in travel in this country and to make it as easy as possible for foreign tourists to make trips.... Secretary of Commerce Luther Hodges got ball rolling personally last month with a whirlwind tour of European countries to talk up idea of travel in the U.S.

Senate Studies Import Restrictions

SENATE IS STUDYING A NEW PROPOSAL to restrict imports.... Plan, sponsored by Senator Edmund S. Muskie, D., Maine, would limit imports from any country to its share of total U.S. market during preceding three years.... But although support is growing, some Senate and House members are questioning the effectiveness of such a plan.... Bill is now before Senate Finance Committee, which is headed by Senator Harry F. Byrd, D., Va.

Auto Production Hits 2-Million Mark

AUTOMOBILE PRODUCTION hit 2 million mark last month.... Industry turned out an estimated 2,014,681 cars through mid-May compared with 3,031,079 units in like period last year.... Altogether, there were 570,160 compacts assembled, or 28 per cent of total.... General Motors took 51 per cent of production pie; Ford, 30 per cent; Chrysler, slightly better than 10 per cent; American motors, 6 per cent; and Studebaker-Packard, a mere 1 per cent.

Government Institutes Excise Tax Evasion Curbs

GOVERNMENT TAX OFFICIALS say new bonding requirements and enforcement activities have curbed evasion of U.S. excise taxes on imported cars.... New regulations require most importers of cars and trucks to give bond, covering expected excise tax payments.... Customs officials are refusing to permit entry of cars unless these bonding regulations have been met.

Taxis Not "Sold" On Compacts

ALTHOUGH COMPACT CARS get 10-15 per cent better mileage than standard cars, country's taxicab operators are not yet fully sold on them.... "We'll just have to stick with larger type 'economy' cars," says one of the country's largest cab operators.... "It's our field right now."

Milwaukee Will Be First To Show '62's

COUNTRY'S FIRST AUTO SHOW featuring all 1962 models will be sponsored by Milwaukee, Wisc., dealers.... Show will be held Oct. 14-18 at Milwaukee Arena.... First auto show last year was AMA-sponsored event, held in Detroit on Oct. 15.

Compacts Have Full Size Trade-in Value

AFTER MORE THAN A YEAR'S USE, how are compacts doing on trade-in value? Relatively good, say most auto companies.... While it is still too early to make a fair comparison, compacts appear to be bringing in better trade-in prices than standard-sized cars.... Valiant and Falcon prices are particularly strong on used-car market, notes one factory official.

SBA Shopping Center Program Hits Snag

SMALL FIRMS SEEKING GOVERNMENT HELP in getting space in shopping centers will have to wait a while longer.... During late months of the Eisenhower Administration, Small Business Administration announced a tentative program to provide funds for local development companies to build shopping centers.... But plan has hit a few snags and is under revision.... Plan authorized SBA to provide up to 80 per cent of necessary funds to build a center and to lend up to \$250,000 for each small business tenant.

Vacation Car Trips Are Big Business

VACATION CAR TRIPS are becoming bigger and bigger business as distances and tourist spending rise.... A new American Automobile Association study shows 85 per cent of all vacation travel is by car, with average mileage about 2,150.... Vacationers spend about \$25 billion a year for transportation, food, lodging and entertainment; 24 per cent for gas and oil.

"Use" Taxes Due For Congressional Study

FIRMS WHO HAVE TO PAY SO-CALLED "USE" TAXES on sales made across state lines may get relief from next year's long-awaited study of problem.... President Kennedy approved a measure adding use and sales taxes to mass of tax practices due for Congressional study next year.... Hope is for a law which will clarify once and for all limit of a state's power to impose taxes on out-of-state firms.

Ed Janicki's Dealer News

New Jersey Automotive Trade Assn. advises dealers not to tamper with the manufacturer's price sticker. It also reminds them that the sticker must re-



Edward Janicki
MOTOR AGE's News
Editor, Detroit

main on the vehicle until it is sold—let the ultimate purchaser remove it. Some dealers are playing it safe by requiring the customer to sign a statement to the effect that the label was on the car when delivered.

If you're lending cars to customers, better check with your insurance company to protect yourself. In a recent case, a dealer loaned a car to a customer, who in turn loaned it to his son. The son had an accident, killed a person. The court handed down a \$100,000 decision against the dealer, which the insurance company denied.

A recent study shows that it costs about \$1484 to drive a standard-size Ford, Chevy or Plymouth on the basis of 20,000 miles a year. Of the total, \$784 is for annual fixed charges—depreciation and insurance—and \$700 for gas, oil, and maintenance. The survey was based on a study of major corporations which pay their salesmen for using a car for their work. The figures indicate that of the monthly cost of operation, 44 per cent is for depreciation.

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More Truck Service Volume Sought

CHEVROLET DIVISION IS LAUNCHING an intensive program to get more truck service volume into its dealerships.... Division plans to set up a network of some 500 truck centers around country at currently established dealer shops.

To do so, company is working with its dealers to expand facilities for handling heavy-duty truck work (such as increasing door widths and heights and installing drive-through truck stalls), providing tools and equipment to do this work, and training special truck technicians.

In many instances, dealerships will institute night shifts to accommodate both the single-truck operator and larger fleets who may already have their own shops.... Many of the dealers also will expand their parts inventories to cover needs of heavy-duty truck accounts in their area.

New Fords To Keep Family Names

FORD MOTOR CO.'S TWO NEW "IN-BETWEEN" sized cars, due this fall, will carry names currently in company lineage.... Ford job (currently coded the Canadian X) will become Fairlane; Mercury car (coded Canadian Y) will take Meteor namesake.

Both larger wheelbase Ford Fairlane and larger wheelbase Mercury Meteor will be dropped.... And new 115-inch wheelbase models will replace them as mid-priced cars in both lines.... All Mercury models, incidentally, will carry Mercury designation, including Comet, to closer identify them with their parentage.

Thus, Ford Division will have a single sized car for each of its series—Falcon, with a 109.5-inch wheelbase; Fairlane with a 115-inch wheelbase; and Galaxie, with a 119-inch wheelbase.... Ditto for Mercury, with 114-inch Comet; 115-inch Meteor; and the 120-inch Monterey.... Looks like there'll be less confusion.... New, shorter cars could mean lower prices, too.

Chrysler Pares Expenses

WHILE MOST CAR COMPANIES CONTINUE to dazzle public with an endless number of body styles, colors, etc., Chrysler Corp., has been moving opposite direction recently.... It has been reducing number of offerings.... For example, company has, over past year or so, cut down number of trim combinations from 563 to 388.

What's the reason? Mainly to pare expenses.... Company's aim has been to simplify offerings within product lines.... Result has been that Chrysler has been able to eliminate many duplicate manufacturing facilities and sales and marketing programs, which have been a drain on corporate capital.

Manufacturers Seek To Prevent Engine Failures

DETROIT IS CONSTANTLY WORKING on cars that will run 100,000 miles without a major overhaul or failure.... But achieving this goal depends on where and how auto is operated and how it is maintained.

"Manufacturers are reviewing their automobiles part by part to eliminate potential trouble spots," says Will Scott, who is in charge of Ford's central product planning office.... "We realize that the cost of making a part right in the first place is only a small fraction of replacing or repairing it after the car is sold."

FOR THE RECORD



Walter B. Cooper

Walter B. Cooper, 69, President of the National Automobile Dealers Association, died last month in Denver, Colorado, after a brief illness.

Mr. Cooper, who operated a Chevrolet-Oldsmobile dealership in Fort Collins, Colorado, assumed the Presidency of NADA this year. He had been in the automobile business since 1933 and an NADA member since 1938.

At the time of his death, Mr. Cooper, was President of the Governing Board of Colorado State University and president of the Colorado Good Roads Association. He was a past President of the State Chamber of Commerce and a Past District Governor of Rotary International. He had also served as Chairman of the Colorado Highway Advisory Board.

Jim Gartland, Executive Secretary, and T. G. Turk, President of the Western Engine Rebuilders Association, present a specially designed wheelchair, donated by the association to the Children's Hospital in Los Angeles, California.



H. E. Quarles, president of American Association of Motor Vehicle Administrators, left, shows E. J. Emond, of Armour and Company, and J. L. Donovan, Minnesota's Secretary of State, right, device for checking pressure of windshield wiper blade against glass to assure good visibility.

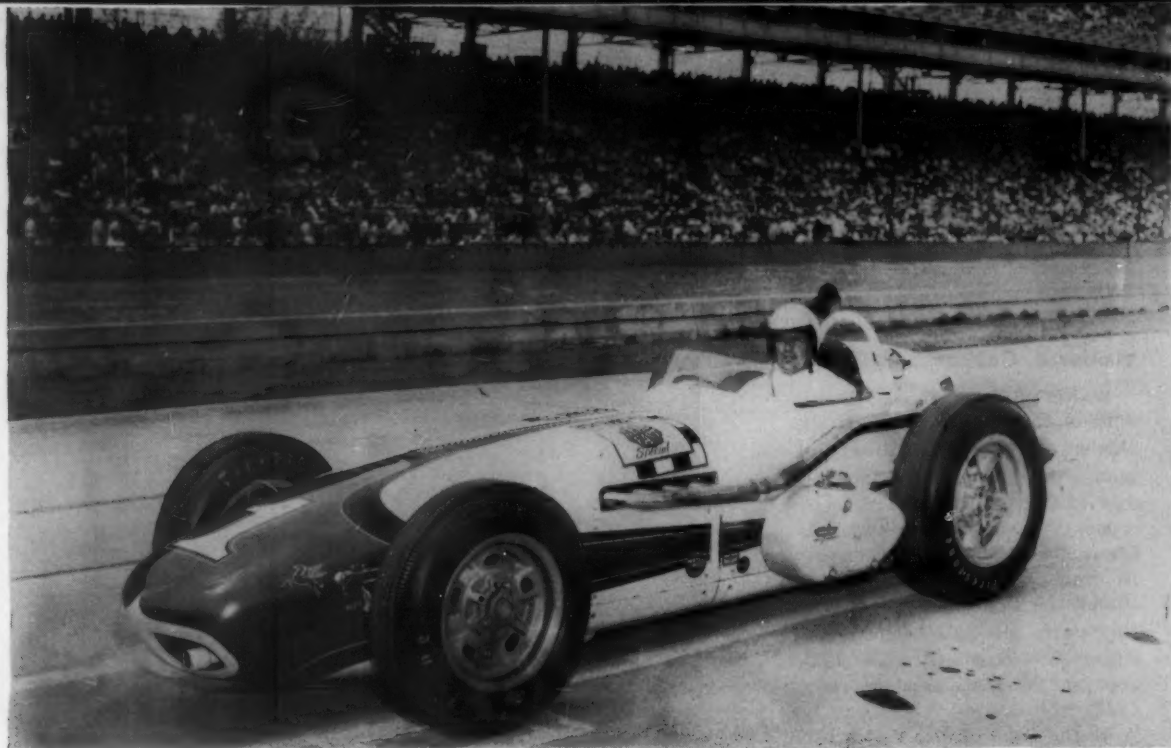
UAW Cool on Salary Plan

Walter Reuther, United Auto Workers President, drew little support at the recent UAW Convention on his proposed salary plan for production workers. However, the broad list of de-

mands which Reuther has been authorized to negotiate will include this item. The UAW has announced that it will hold out for a two year contract instead of the three year one that is currently in force.



Presentation of first Chicago area "Future Automotive Technicians of America" charter is made by J. L. Wiggins, right, Executive Vice President, Automotive Service Industry Association, Chicago, to William Luchitz, Automotive Training Supervisor of Prosser Vocational School. Looking on is Larry Paszkeet, school's F.A.T.A. president.



A. J. Foyt in the Bowes Sealfast Special that he drove to victory in the Memorial Day Indianapolis 500. In averaging over 139 miles per hour, A. J., a native of Houston, Texas, set a new record for the event.

NEWS CENE



Pretty Diane Hunt, Indiana University co-ed prepares to present the big, six-foot Borg-Warner trophy to the "500" winner.



Already a user of seat belts, this driver looks as if he needs a parachute as he "takes off" in an exhibition of automotive madness with the Jack Kochman "Hell Drivers."

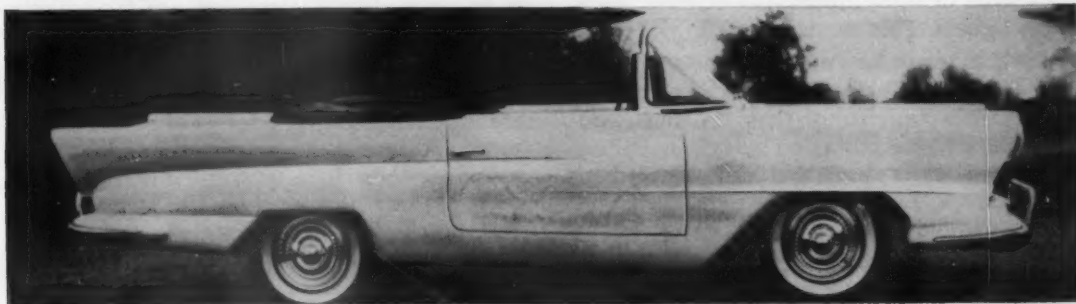


It isn't always easy to find the right car for these spring outfits.



In Florida, the Sunshine State, "drive-in" car washes are the latest thing.

Begorrah! it's an Irish Compact. This 5 passenger convertible, the Shamrock, is built in the "old country," strictly for export to the U.S.A.



SEAL it RIGHT for no comeback

By Terrence J. McCabe, Feature Editor

An oil or grease seal worth removing is a seal worth replacing. When you're ever in doubt throw 'em Out!

SEALS, seals, everywhere and not a drop to drip. You've heard a platitude something like it we're sure. But we're talking about oil and grease seals. A very essential component in any repair job. Seals are used in front and rear wheel bearings, standard and automatic transmissions, rear axles, power steering units, engines, and their accessories. They perform a very vital and necessary function in the operation of the modern motor car. Yet, some mechanics are inclined to treat them too lightly.

Many years ago mechanics thought that a seal should fit tight around the bearing shaft it was to seal. This would then allow it to fit correctly after it had worn into its own running clearance. Today we know better. Experience has taught us that bearings and seals; in fact, everything on today's machines give better performance and longer life when they are precision fitted to the surface to be sealed. The old expression, "A good seal is a tight seal" no longer holds true. It has been proven that tight seals always fail pre-



Your smiling jobber can supply you with any type seal for any job. "Eureka, we have it," he said.

maturely. The only seal that works is the right one recommended by the manufacturer. However, even this seal will not do the job if other sealing factors are not thoroughly investigated.

What are the other sealing factors? Well, one very important one is the method of installation. All seals are designed to seal out oil or grease. In addition, some are provided with a surface to exclude dust and dirt. Each surface of the seal must face the element it is designed to control. Take the oil side of a conventional seal. The sealing lip or edge must always face the oil or grease you intend



Above: Insert seal into special tool with lip of seal facing the wheel bearing. Tool protects the lip.



Above right: Lower the special seal installer and seal into the bearing bore of the hub. Drive seal home.



Right: When seal is fully seated, remove tool then wipe the excess grease from the hub and seal housing.

Above photos courtesy of Chicago Rawhide Mfg. Co.

to exclude. This rule always applies. Point the edge in the direction of the medium you intend to seal. Don't ever stretch the garter spring. This will increase lip pressure which will result in the sealing edge of the seal alternately, grabbing and releasing its edge on the rotating shaft. This results in a temperature build-up which in turn causes more and more pressure to be applied; failure quickly results. Stretching the garter spring also causes the seal to lose its concentric shape thus causing the seal to leak. Some seals are operated under normal service at temperatures over 300 degrees F. Any in-

crease of temperature pushes the seal thermal limits over the ragged edge and causes the seal to fail.

Installation

The manufacturer produces the best seal for the job. The partsman then sells you the correct seal you require for the installation. Then your man beats the bejabbers out of it during installation. There's nothing you can do about the making of the seal. That's been done by the best brains and skill in the industry. However, you can see to it that the

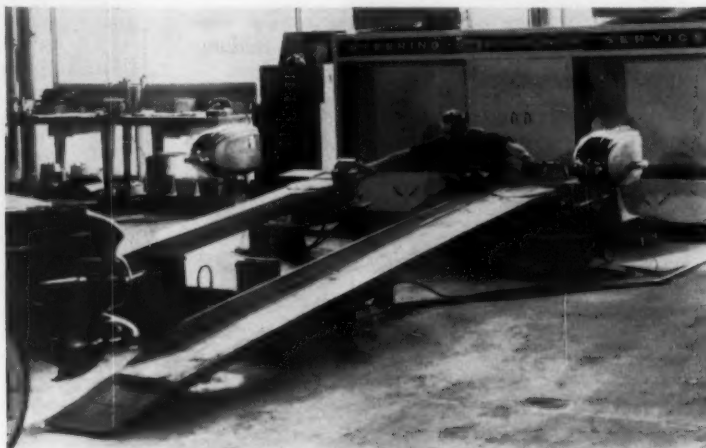
Continued on page 104



Alignment Done the Modern Way

You don't have to have a large shop to get into this profitable business. One bay will do it

By John K. Montgomery,
Technical Editor



Runways are adjusted to handle any American or foreign cars.

SERVICE stations and shops that are cramped for space and have a need for front end aligning equipment can get into this profitable business by purchasing new equipment designed to take up a minimum amount of space. One shop in Lansing, Michigan, has just recently installed a full-scale wheel alignment service into the space of a conventional stall. One mechanic oper-

ates this department and averages about ten jobs per day. Customers are invited to watch the work as it is done.

The aligner rack eliminates the long approaches and runways which jut out into driveway aisle thru use of a remote-controlled air lift device which operates runways.

In the "down" position, the rear tips of the runways are on the floor, allowing the oper-

Modern alignment rack is designed to handle compacts and foreign cars with rear swing axles.



Using this equipment mechanic works from above to remove shims controlling caster and camber.



ator to drive the car on the rack with a minimum of turning space. Once on the rack, the driver remains in his seat, presses a button on the control hanging near the car window, and the aligner rack automatically rises into a level position. At the same time safety runway guards and a safety support leg automatically snap into position. The runway guards prevent the car from rolling back off



Remote control air lift device is conveniently operated from driver's seat to raise and lower rack.

the rack and the safety support legs support the rack in the event of a line break or similar malfunction of the air supply.

Safety Precaution

Lowering the car is accomplished in a similar manner from the driver's seat. As a double safety precaution, the safety support leg must be released manually by the operator before the rack can be lowered, and the runway guards will not release until the rack is in the down position.

Variable-tread runways on the rack adjust easily for tread widths from 40" to 68", with runways gliding on over-size, non-binding support rollers. Although just 15', 10" in overall length, the rack handles any wheelbase through 136" and vehicle weights up to 6000 lbs. at 150 lbs. air pressure, thus servicing any standard passenger car on the road.

The easy-action runways make it possible for more accurate and easier rear wheel alignment of wheels on swing-axle cars. The operator simply places his hand on the bumper, "bounces" the car several times and the in-out action of the two runways forces the wheels to assume the normal road position for

Continued on page 124



Middle Atlantic States

Birthplace of Vehicle Inspection

WITH 1.5 million vehicles currently registered in and using the highways of the seven states in the Middle Atlantic area, periodic vehicle inspection has become of vital interest to nearly everyone.

MOTOR AGE sent its reporters to every State Capital in this heavily congested section of the country to compile an up-to-date survey of their motor vehicle inspection laws.

From the Commonwealth of Pennsylvania, where the first Inspection law was passed, to the state of Maryland, where effective legislation has yet to be enacted, there are forces at work whose primary aim is to make the operation of unsafe motor vehicles as illegal as it is thoughtless. Here's how the pioneers in the movement handle their periodic vehicle inspection:

MOTOR AGE continues its survey of state inspection laws. Here's how this important program is handled in the Middle Atlantic States



Survey Basis of New York Law

Albany, N.Y.—A compulsory motor vehicle inspection law has been operating in New York State since December 1956. The law was enacted by the 1954 Legislature to be effective in September 1955. However, the Legislature delayed the starting date to December 1956.

Originally, the compulsory inspection law

covered wheel alignment, brakes, lights and steering. Since last February the inspection includes, in addition, windshield wipers, windows and tires.

All cars more than four years old, licensed in New York State, must undergo safety inspection. All used cars, regardless of age, must be inspected. The periodic inspection is required every 11 months.

Defective vehicles must be repaired before an inspection certificate is issued. Vehicles that come under the inspection law cannot legally operate on the highways without an inspection certificate on the windshield.

A special unit of state police makes regular inspections of garages licensed by the state to conduct safety inspection tests. This also covers automobile dealers and fleet owners licensed to issue inspection certificates.

Brakes, wheel alignment, and lights are tested by mechanical devices in the licensed garages. Owners of the inspection stations hire the mechanics.

New York State devised the inspection law after making a survey of other states where inspection was required. Statistics in some areas had shown that from one to 33 per cent of the motor vehicle accidents were traceable to defective equipment.

According to individual motorists, less than 8 per cent of the accidents are blamed on faulty equipment, a study showed.

New York State places a maximum on the

Continued on page 96

Let the spark plugs TELL THE STORY

A careful visual check of each spark plug removed can mean the stopping of comebacks

By Terrence J. McCabe, Feature Editor



Normal Spark Plug: This baby came out of a "clean living" engine. A few deposits will be visible having a light tan or gray color. No evidence of electrode burning can be seen and gap growth will average about .001 inch per 1000 operating miles.

Cold Fouling: A covering of carbon deposits dry and dark in appearance usually means the next hot-test range spark plug should be used. If only two plugs in a set look like this, look for bad high tension connections, sticking valves or a manifold leak.



IT'S so easy to spot a faulty spark plug with today's electronic 'scopes. In fact it's so easy that many mechanics don't take the time to examine the plug for the cause of the failure. In many cases the plug fails because of some internal engine condition or driving habit of the nut behind the wheel. Simply replacing the plug cannot correct the engine or driver problem. Except where the problem is that of incorrect heat range, replacement of the same type plug will only result in a comeback.

Wet Fouling: Plug looks as if it were dipped in "erl." If all plugs look like this then an internal engine condition should be suspected. With only two plugs in this shape, suspect a faulty vacuum booster, leaking intake manifold under rocker cover.





Splashed Fouling: Found on engines that have just been tuned. When engine specs have been returned to normal, pressures and temperatures reach their correct peak. This peaking causes chamber deposits to fly-off and impinge upon the plug causing a short. Mild cleaning restores 'em!



Gap Bridging: This one's a victim of flying deposits. Generally, fluffy deposits may accumulate on the plugs in slow city driving. When the engine is suddenly put under heavy load the deposits melt and bridge the gap. Sometimes a blast out the freeway clears 'em!

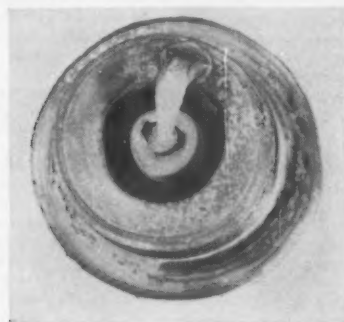


High Speed Glazing: Engine will misfire at high speeds. The shiny nose suggests that temperatures have risen sharply during hard acceleration. Deposits melt and form an electrical conduction path shorting the plug. Check the cooling system. Use a colder plug.



Constant Speed-load Deposits: This condition is usually found in engines with governed speeds. Stationary engines driving pumps or compressors at constant loads and speeds cause gradual build-up of deposits. Disconnect load and vary speed daily to keep 'em clean.

Turbulence Burning: The result of normal turbulence patterns in some engine combustion chambers causes the ground electrode to wear on one side. This should not be a cause for alarm provided normal plug life is being obtained. Replacement of plug required.



Chipped Insulator: Resulted from bending the center electrode during gap setting operation. Sometimes severe detonation can also cause the insulator nose to split at the firing end. Exercise more care in the adjustment of spark plug gaps and this problem won't plague you.



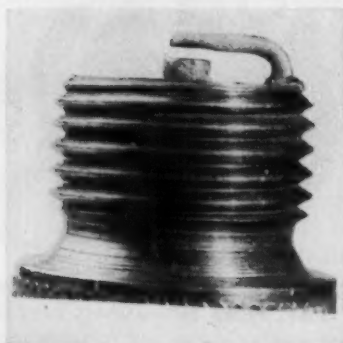
Spark Plugs, continued

Use your head for more than a hat rack. Unless you make a close examination of each and every plug removed, you're missing out on a heck of a lot of plus service business. When you miss out on plus business, you're losing money. No Bloody Yank in his right mind wants to lose money under any condition. So let's look alive and sharpen that Eagle hunting eye of yours. Look those plugs straight in the eye and you'll be well on your way to collecting the biggest and most wanted Eagle in the world, the American Dollar.

The old "right hand rule" always works wonders with spark plugs; when in doubt throw 'em out! That's great! As a matter of fact we should do it more often. When in doubt, toss 'em out. Any plug worth removing is worth replacing. But let's not go out on a limb.

Here's some hints on spark plug removal. First always break the plug threads loose from the cylinder head with a plug socket wrench. Reconnect the secondary wires and run the engine for a second or two. This will blow out the carbon particles loosened from the plug. Disconnect the high-tension wires. Then with the air cleaner in place or with the carburetor intake covered, use an air hose to blow off the sand and dirt at each spark plug. This method will insure against the entrance of foreign matter.

Take a long look at the firing end of every plug for the real clues to why it failed. The old plugs always tell the true tale. Replacing the plugs without knowing why or how they failed is like using a parachute that was packed by your mother-in-law, you never know how it will turn out. There are so many conditions affecting spark plug life and performance that several volumes could be written explaining them. As Confucius once said, "one picture is worth a thousand words." So here are several Chinese puzzle pictures through the courtesy of the Champion Spark Plug Company that should help clear up any faulty plug problem.



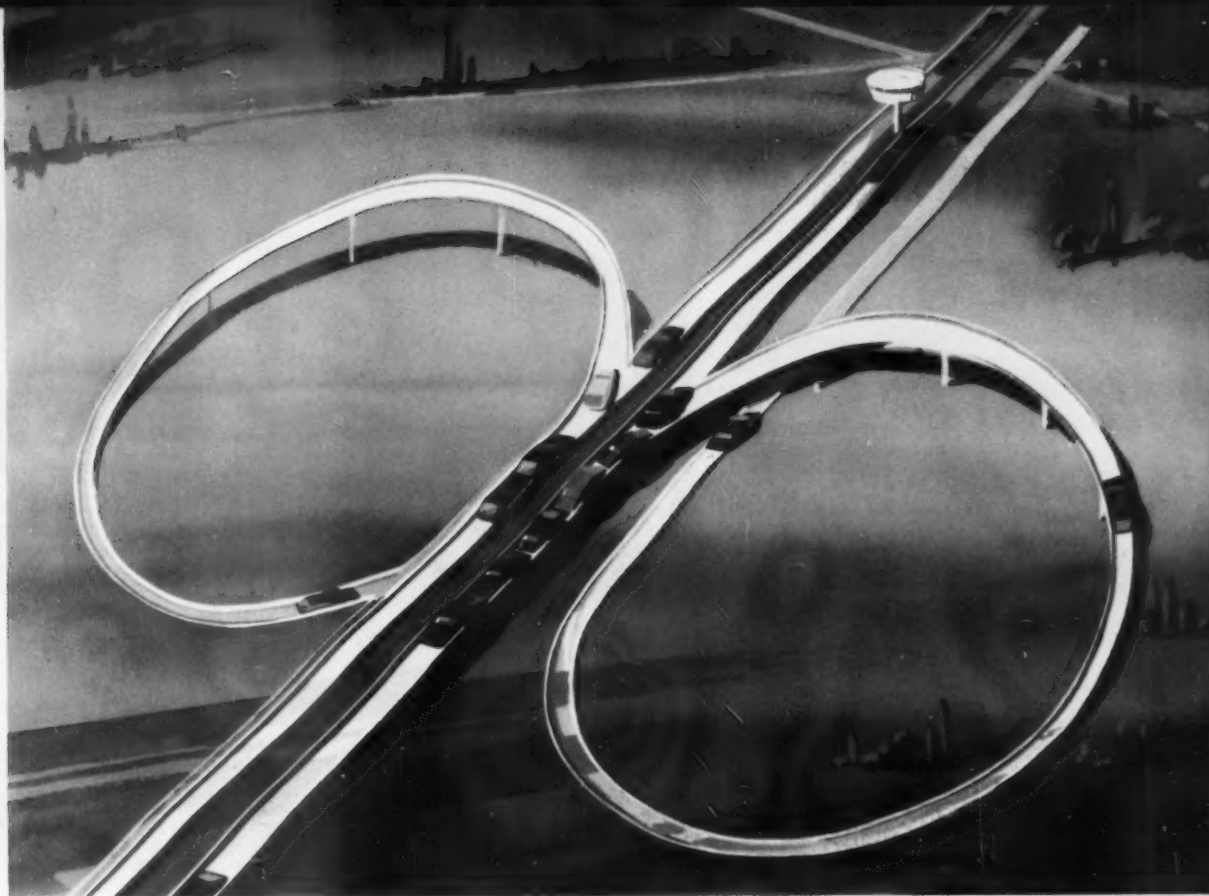
Reversed Coil Polarity: This can result in the "cupping" of the ground electrode. Generally there is little evidence of wear at the center electrode. This can cause rough idle and misfiring. Reversing primary coil wires corrects it. Use your plug scope to spot 'em!

Initial Pre-ignition Damage: Excessive temperatures produces melting of center electrode, later, the ground electrode. Insulator appears mildly free of deposits. Spark plugs are like electrical fuses, when they melt you had better look for trouble. There are many causes for overheating.



Mechanical Damage: Caused by foreign object in the combustion chamber. Always loosen plug first before removing from engine. Blow sediment from plug area of cylinder head. Run engine a few moments, then remove plug. This prevents dirt from entering combustion chamber to damage spark plug.





THE G.M. AUTOLINE

Architects of the Automotive Future

The Industrial Designers Institute was asked by the Editors and Publishers of Automotive Industries and Motor Age to form a panel discussion. This was accomplished. A group of qualified industrial designers professionally practicing the art of automotive design met to discuss automotive styling and the contributions made by the industrial designer.

Panel moderator was Kenneth A. Hopkins, Detroit Chapter Chairman of Industrial Designers Institute, associated with Lawrence H. Wilson Associates, industrial designers. Panelists were, Charles Jordan, chief designer, Cadillac Studio, General Motors Styling; John Najjar, executive stylist, Advanced Styling, Ford Motor Co.; Richard Teague, assistant director of automotive styling, American Motors Corp.; and, Arthur Tarabusi, designer for Automotive and Industrial divisions, Great Lakes region, Reynolds Metals Co.

Editor's note: Meeting the challenge of improving mobility in automotive transportation is one of the biggest tasks facing the automotive industry at every level from designer to dealers. The following digest of ten tasks of the Automotive Industrial Designer gives details of how typical top designers are helping to solve the nation's vehicular improvement problems.

Mr. Kenneth Hopkins: What is the role of the automotive industrial designer?

He is a businessman as well as a designer. He is concerned with far more than design in an abstract sense. He is acutely aware of the consumer's needs and demands for utility, reliability, safety and economy, from which the ultimate consumer derives comfort and pleasure.

Our discussion will show how the product is born and matured



Charles Jordan—"The designer must utilize esthetics to turn lifeless dimensions into a beautiful, exciting and dynamic vehicle. His artistic sense comes into focus here."



John Najjar—"Pre-design research involves keeping in touch with the latest in market research and design development . . . By discussion with authorities . . . by reading authoritative publications."



Richard Teague—"We have an extremely close working relationship with our top management—a compact management group—which enables us to move very rapidly on getting decisions . . ."



Kenneth Hopkins—"If people are made safer, more comfortable, more eager to purchase . . . and just plain happier . . . the designer has succeeded."



◀ Arthur Tarabusi—"The automotive designer converts the new concepts of design methods and fabrication into feasible automotive applications by developing alloys of suitable strength."

Below: The panelists gather round the meeting table to express their views as described in this and a subsequent article on the future of automotive design ▶

through pre-design research, through design projects, the application of specialized design tasks. The designer must respect human requirements. He must understand production economies. He must analyze consumer and market research facts. He must create a pleasing and exciting image in which there is good taste and good judgment.

"Bear in mind," to quote Henry Dreyfuss, prominent industrial designer, "that the object being worked on is going to be written on, sat upon, looked at, talked into, activated, operated or in some other way used by people individually or en masse." When the point of contact between the product and the people becomes a point of friction, then the industrial designer has failed.

On the other hand, if the people are made safer, more comfortable, more eager to purchase, more efficient or just plain happier by contact with the product, then the designer has succeeded.

Our questions will be headed by specific topics, the first of which is "Pre-Design Research" and the question is, "What actions are taken by Automotive Designers to use research to evolve original design concepts?" Mr. Jordan, you may start the proceedings.





The Gyron, by Ford stylists, is a delta-shaped vehicle envisioning two running wheels instead of the usual four. It is 209 inches long, 44.85 inches high, 86 inches wide.



The future experimental Atmos was also designed by Ford. Wheelbase is 105 inches, the Atmos is 220.58 inches long, 48.1 inches high and 79.7 inches wide.

Mr. Charles Jordan: One of the first and most important considerations in a design concept, is the position of the passengers and their relation to the interior compartment, seating comfort, interior roominess, ease of entrance and exit, visibility and many other considerations in the interior of the car are related to the size of the people.

The Size of People

To design machines to suit the man, we must know more about his size, shape and capabilities. To aid the design process, the research group at General Motors Styling has developed a people-measuring device called an Anthropometer. The Anthropometer can measure over twenty important body dimensions. People are measured not only in inches, but also in percentiles, a measurement of their relative size.

If, for example, a hundred people representing the consumer were standing in line from the

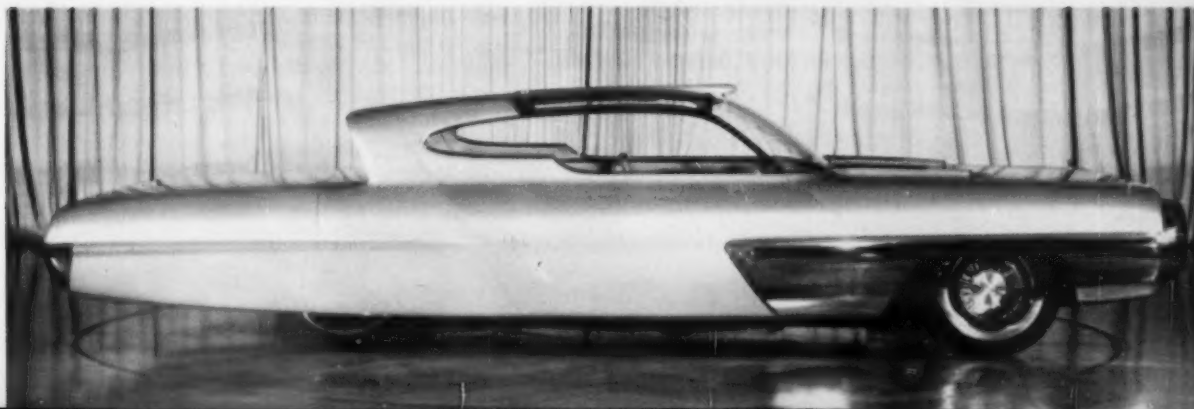
shortest to the tallest, the fifth from the shortest would be the fifth percentile. The fiftieth person in line, the fiftieth percentile and so on. Generally a satisfactory design range, we find, is between the fifth percentile and the ninety-fifth percentile.

A study of this raw data has produced many new approaches to design. For example, once knowing the variation in seated eye height, a seat may be designed which adjusts to keep the eye point constant for maximum visibility. Further study of the data may reveal that controls such as steering, brakes and accelerator pedal would be easier to operate if adjusted individually to the reach of the driver's arms and legs, rather than the driver adjusting his seat to reach these controls.

Mr. Hopkins: Mr. Najjar, may we have your comments?

Mr. John Najjar: Pre-design research is an im-

La Galaxie, designed by Ford, was developed to explore future styling concepts as they evolve from engineering and technological advances. Its overall height is 51.8 inches.





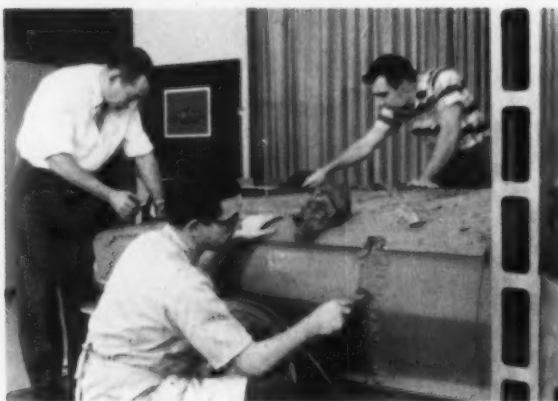
1 Styling experts in round table conference mark the beginning of the design program



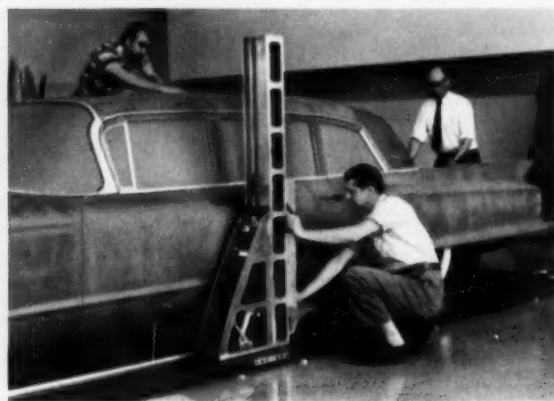
2 Original color sketches of important design details are prepared for many components

Eight Steps in

5 Larger models are sculptured in clay to visualize overall design concept and harmony of lines



6 The full scale model in clay is developed with a height gauge measuring control of the work



portant part of the automotive designer's function. This involves his keeping in touch with the latest in market research and design development through many means. By discussion with authorities in these fields, by close contact with his company's scientific research activity and through reading authoritative publications.

From the germ of some new principle, he will initiate in the advance styling area an exploration of new surface configurations. At times the exploration of a series of these new principles makes it possible to develop a "dream car," a vehicle whose concept may be far different than current concepts.

Value of "Dream Cars"

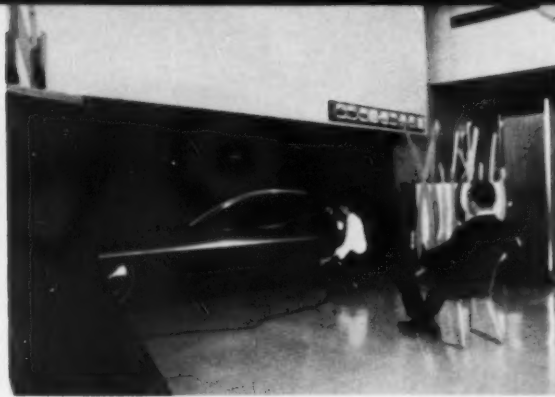
In effect, these "dream cars" serve as a three-dimensional concept for the future, which can be

evaluated by both company management and the public and create an image to which scientific research and engineering can relate their own design thinking.

Mr. Richard Teague: All major automotive companies have within their styling areas research or advanced design sections, in addition to the regular production studios. American Motors is no exception. This is the area where there are very few restrictions put on a stylist and he is free to explore new shapes, forms and proportions that the regular production stylists only dream of. Here the theoretical car of some probable future date is sketched, laid out and modeled. It could be of the ducted fan, fuel cell or turbine type approach. Because the research stylist is generally working from rather sketchy power plant and chassis information, he is quite often



3 Craftsmanship expressed in table-sized models brings designers' drawings to life



4 Style lines are further developed in color on studio blackboard as the next step

Designing a Cadillac

7 Structural details are visualized so that all interior dimensions can be verified and checked



8 The finally completed new Cadillac is thoroughly studied by the design group



called upon to work very closely with research engineers in evolving component layouts of unconventional vehicles.

Mr. Arthur Tarabusi: As the automotive companies do research, we of the aluminum industry also do considerable research in all phases of design engineering in metal finishes. Our metallurgical laboratories, engineers and designers are continually working on projects in conjunction with the automotive and other companies.

The automotive designer converts the new concepts of the design methods and fabrication into feasible automotive applications by developing alloys of suitable strength.

Mr. Hopkins: Our second topic, "Design Projects." The question, "Please list the steps in a typical design project, from the original idea stage to the project completion."

Mr. Najjar: Styling at Ford Motor Company, together with other company activities, participates in discussions concerning forthcoming models. From these discussions emerges a resolution for an initial set of plans for these models. These plans outline, among other things, sets of package dimensions defining the scope of the future projects. As three-dimensional models are developed, these dimensions may be altered to meet specific new requirements subsequently arising.

Initially the models are shown in solid clay, with the exterior surfaces painted and bright areas silver foiled. They are shown subsequently with a see-through roof in order to achieve a more realistic appearance.

It is in this latter stage that general sheet metal approval is given. A plastic record mold usually is made of the approved model and a



The composite of all dream cars. All five automobile manufacturers applied the genius of automotive styling to create one average composite car for public showing

number of full-size casts provide additional armatures for further work on various body styles.

It should be clearly understood that throughout all the phases of full size clay model development a constant pulse-taking relative to tool cost, piece cost, engineering feasibility, product desirability and appearance is undertaken. All of these factors must remain consistent with the established objectives of the program.

Mr. Tarabusi: At Reynolds the design project usually begins with a request from one of the automotive or other companies who are interested in exploring the possibilities of using aluminum for their product. Our job as designer is to produce the use of aluminum in design wherever possible.

Mr. Teague: The current Rambler American is an excellent example as an answer to this question of Design Projects. It was decided in early spring of 1959 that the 100-inch American should be completely restyled for 1961.

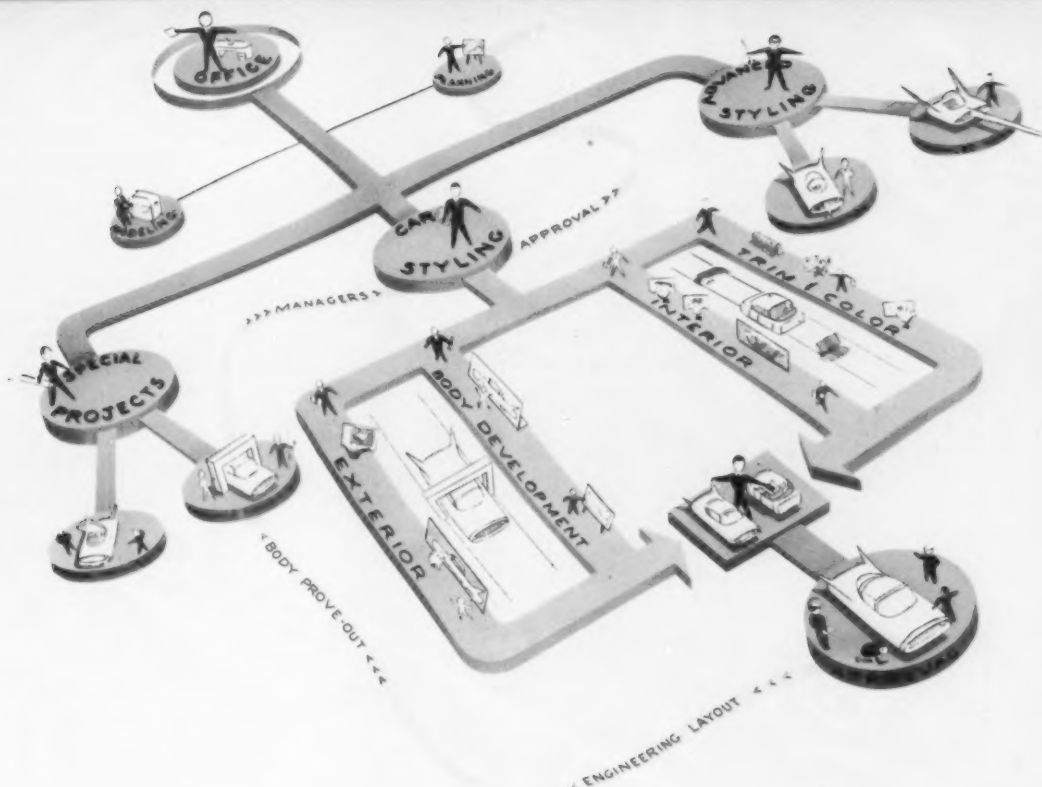
Design-wise it was a target from the beginning that the car should be clean, crisp, straightforward and above all else, lasting and contemporary in concept.

Two clay bucks (one a four-door sedan and the other a four-door station wagon), were mocked up and within the next 30 days several separate side treatment designs of totally different character were modeled on these forms for management review. Incidentally, American Motors is unique in that it has an extremely close working relationship with our top management group (a compact management group), which enables us to move very rapidly in giving decisions which is so vital to any program.

Concurrently with the beginning of this extensive modeling program, idea sketches and renderings were also begun within both the exterior and interior styling studies.

Within several short weeks after this, the first metal prototype was completed and further evaluation was made by management, and the program insofar as styling was concerned was complete. This, I believe, was a record in the automobile industry.

Mr. Jordan: At the beginning of a new design program at Cadillac, the design group in the studio first sit down together to develop the overall goals of the program. The degree of change



Design process chart developed by Ford Motor Division shows the step-by-step progress of design functions from start to finish

is known, the basic engineering limitations have been established and the designer designs the car in words as much as you can design a car in using words. Then, individually, members of the design group set to work on exploratory sketches of an overall design concept, experimenting with the most promising ideas with the aid of a sculptor and a small-scale model.

Meanwhile, the engineering group in the studio establishes the architecture of the car by carefully laying out proper seating in a roomy interior compartment and combining this information with the layout of the chassis, engine and other components that make up the anatomy of the car. A full-size seating buck is then built to check this seating and the interior compartment.

Now the design group and the engineering group join forces. Over the architecture of the car, the designer explores the most promising design ideas full-size. To check out the full-size design, a full-size illustration is made from the developed lines.

After the design has been evaluated and perfected as well as possible in two dimensions, templates are made from the four views of the draw-

ing. The modeling group in the studio now begins a full-sized clay model.

Continual changes are made of course, until the design is right in three dimension. The clay surfaces are perfected and shown for management approval. During the full-size clay model development, the Cadillac Division and Fisher body engineers are in the studio often working with us toward a practical production design.

The final examination, then, of this design process comes when the fiberglass model has been completed with a finished interior and exterior and shown for final management approval.

Mr. Hopkins: Our third topic deals with Specialized Tasks. Gentlemen, please give one or more specialized tasks which must be performed by the automotive designer.

Mr. Teague: In the development of any product, whether it be an automobile, appliance or a building, the manufacturer's basic philosophy or image must be reflected in the final appearance of this product.

This policy, of course, is determined by the success of previous years, elaborate market surveys and other methods.

BIOGRAPHIES

Mr. Charles Jordan is a graduate of Massachusetts Institute of Technology and the recipient of numerous design awards. He is currently chief designer, Cadillac Studio, General Motors Styling.

Mr. John Najjar—Was appointed executive stylist, Advanced Styling, Ford Motor Company, in 1957. He joined the Ford Motor Company in 1936. He has been cited by the Industrial Designers Institute for outstanding product design.

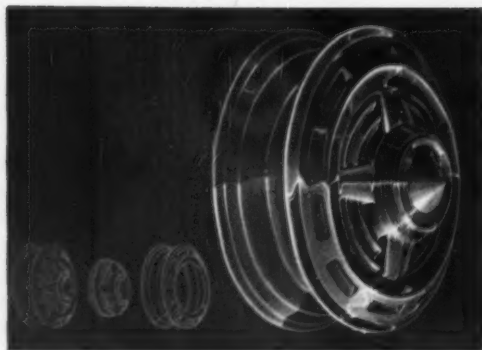
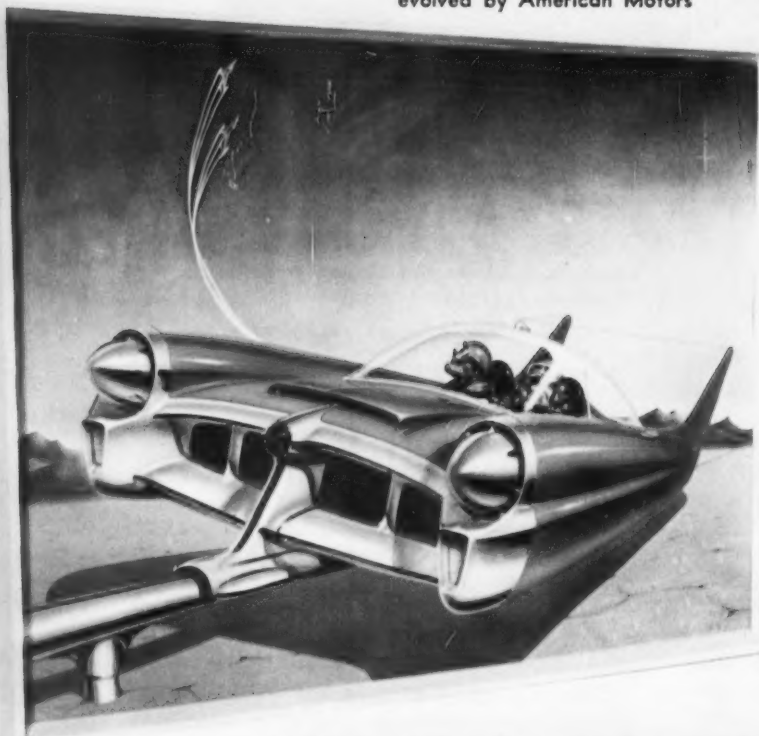
Richard Teague attended Art Center School, Los Angeles and the University of California. He is assistant director of automotive styling, American Motors Corporation. He is a well known authority on sportscars and classic and

antique cars and is past chapter president of the Veteran Motor Car Club of America.

Arthur Tarabusi—Attended Ohio Wesleyan University and the University of Iowa. Currently he is designer for Automotive and Industrial Divisions, Great Lakes Region, Reynolds Metal Company. Mr. Tarabusi is the current Treasurer of the Detroit Chapter of Industrial Designers Institute.

Kenneth Hopkins currently is Detroit Chapter Chairman of the Industrial Designers Institute. A graduate of the Cleveland School of Art, he has been associated with important product and automotive designers. At present he is associated with the industrial design consultant firm of Lawrence H. Wilson Associates, Detroit.

Below—A dramatic color rendering of a designer's concept of a future high speed controlled course vehicle evolved by American Motors



An example of an advanced design idea for a vehicle wheel developed by Reynolds Metals designers

The GM Autoline

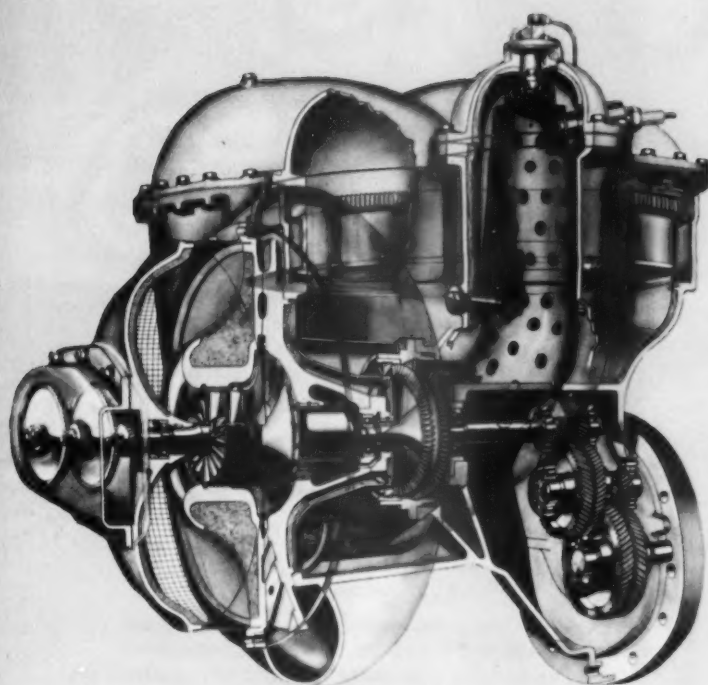
Mr. Jordan: Here is an example of some aspects of vehicle utility that we might expect in the future.

Recently, the research people at General Motors styling developed a new concept for the transportation of passengers and called it the Autoline.

The purpose of the Autoline is to improve inter-city communications through a reduction in travel time, inconvenience and total cost. We believe, for example, that sometime in the future it will be possible to provide a private transportation system with vehicles which operate in two distinct ways. One, the vehicles would travel on ordinary streets at moderate speeds in the familiar manner. The same car, possibly with an added power unit rented from the highway agency, could be put on a limited access roadway and travel under electronic control at speeds of perhaps two or three times as great as present between points separated by a considerable distance.

These vehicles would operate on their wheels in the normal manner until entering the system. The driver would pull up to an entrance and punch his destination into a console. A computer would program him into the traffic flow at the right moment by means of a spiral acceleration ramp. The car would then enter the traffic stream under automatic control in a programmed opening at low relative velocity.

This is the first of a two part article on "The Architects of the Automotive Future." Part II will appear in our July 15 issue.



Chrysler Automotive Gas Turbine

GAS TURBINE PROGRESS REPORT

A roundup of progress in the development of the automotive gas turbine

THE gasoline engine as we know it today is being challenged by some new forms of energy conversion machines. It is by far still well in the lead. The Otto Cycle internal combustion engine is bucking sources of power that only a few years ago were unheard of. The greatest competitor is the Gas Turbine—a simple rotary machine with a minimum of parts and perfect balance, free of vibration. The Diesel at first was a major challenger but initial cost and the weight factor held the Diesel to the truck, marine and stationary fields. The Diesel still offers some competition in the passenger car field, however, this is mostly in the taxi and in overseas motor cars. On the continent, the cost of gasoline gives the Diesel an economic advantage that doesn't exist in this country. Other economic and thermo-dynamic design factors have acted to restrain the acceptance of the Diesel engine into the Automotive field.

What's a Gas Turbine? It's a rotary machine that burns liquid hydrocarbons and consumes large amounts of air in the process of combustion. Most

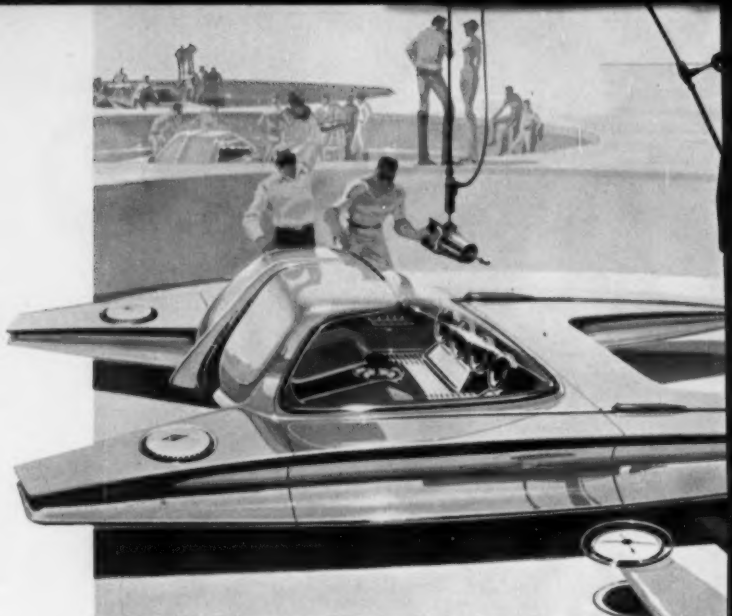
American mechanics are now pretty much familiar with the operation of the automatic transmission. The engine drives a fluid fan which impells oil at a great velocity against a set of blades in a turbine member. This turbine member through gears then drives the car.

This same principle can also be applied to the gas turbine except that the oil is replaced by high temperature gas at high pressure and velocity. The turbine operates on an air fuel ratio of about 75 to 1. Compare this with the gasoline engine air fuel ratio of 15 to 1. It can readily be seen that the gas turbine consumes enormous quantities of air. This large amount of air is supplied the unit by a rotary compressor like a many bladed centrifugal fan. A glance at the illustrations in this article will disclose the turbine air compressor and its other components.

The gas turbine is smaller in size and it weighs less than the gasoline engine of equivalent horsepower. The turbine is self-cooled and thus eliminates the need for a bulky cooler.

(Turn to page 64, please)

NEW SHAPES NEW FORMS IN STEEL



CREATIVE imagination of America's designers and engineers give impetus to the emergence of an exciting new world. A world of imagination, a world of design creativity, a bold new world of ideas. AUTOMOTIVE INDUSTRIES and MOTOR AGE wish to transport you across the threshold of this stimulating new world of tomorrow. We hope this glimpse into the future will spark your creative imagination. These are just ideas in design and



◀ This intriguing sedan of tomorrow is designed for extremely fast, comfortable and safe travel in the highly mechanized world of the future. Made of alloy steel framing and aluminum-coated carbon steel for body shell paneling for lightness and strength, plus exceptional rigidity.

Unusual construction and power plants that will use imaginative designs and systems for energy exchange are in the works for the future. These drawings are not simple flights of fancy but oftentimes accurate predictions of the many new products you'll be using in the future.





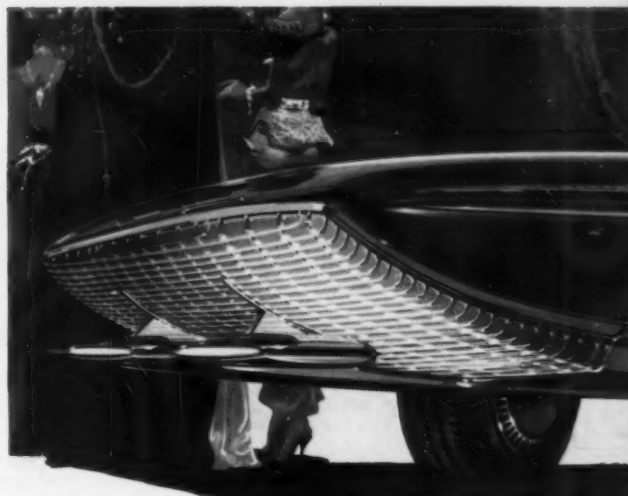
The hum of powerful machines, the drama of final assembly are captured and held for a moment as this bold new two-place vehicle receives its finishing touches by hand.

Tomorrow's demand for high fashion plus function are answered by this luxury car that is styled to be equally at home on the road or at the club.

engineering, strange and fanciful, yet, well within the realm of future possibility. They are compatible with advances in material technology of our present age.

Think back a few years, maybe ten or twenty. Would you buy the story of what we have today? We wonder! In the strange world of tomorrow, a world sometimes difficult to imagine—changes will be incomparably dynamic. ■

The designer calls this a "cook-out" car. Food is prepared on a portable solar stove. The power is supplied by aiming the mirror-bright, stainless steel focus screen of the Solar Converter towards the sun. The food conditioner is made of easy to form Vinyl Coated steels, neat and easy to clean.



Illustrations courtesy United States Steel Corp.





Clarence D. Martin, Jr., (center) Under Secretary of Commerce for Transportation, expresses his views to Motor Age editors, Neil G. Regeimbal and Frank P. Tighe.

An interview with the

Under Secretary of Commerce

EDITOR'S NOTE:

The car industry now has one of its own in the top councils of the federal government. Clarence D. Martin, Jr., operator of a Cadillac-Olds-

mobile agency in Santa Monica, Calif., is now the government's top transportation executive. As the new Under Secretary of Commerce for Transportation, "Dan" Martin will have a strong voice in government actions on highway planning and

Q.—Mr. Martin, as a former executive of a car dealership when do you believe a major pickup in sales will occur?

A.—I do not look for any sudden sharp pickup in sales, other than seasonal. You will notice that the daily selling rate of automobiles has increased month by month. Sales of the new models next fall should be strong.

Q.—When do you believe the industry will have another 7.5 million car year?

A.—I agree with the automotive industry economists that a 7.5 million automobile year will be achieved in the '60s. It would not surprise me to have it occur by 1965. We are a growing nation with a corresponding growing demand for products of all kinds. This is particularly true of automobiles which are a necessity for so many millions of our people.

Q.—Knowing as you do the problems and interests of the car sales and service business, what do you believe the industry can look forward to from the Kennedy Administration over the years ahead?

A.—This Administration is getting the country on the move. With more jobs and more people earning more money, industry can produce more goods and sales will rise. Thus, the car service industry can look forward to increased demand from a more vigorous economy coupled with a growing population.

Q.—What do you believe are the major problems facing the sales and service industry? What, if anything, can government do to help?

A.—One of the major problems confronting the industry today is the necessity for carrying

large inventories. This is brought about by the big increase in the number of models. Most dealers have both the standard size automobile and the compact automobile with three models in each line, plus station wagons. This, in itself, has doubled the number of cars needed in inventory without which a dealer cannot have volume sales.

Floor plan financing expenses are much higher with increased inventory requirements. Unless the dealer's profit per car is adequate to offset these and other increased costs, he is in trouble. The National Automobile Dealers Association has appointed a Task Force to determine what the dealers' problems are, and ways to revitalize the franchise system. I believe that this is an excellent approach to the problem.

Government can do a great deal to help the automobile dealer in the same manner in which it can help all types of business—primarily through the President's program for economic growth to which I have already referred. In addition, the Department of Commerce, through the services of its several agencies working in the economic field, can provide many types of assistance. I would mention specifically the Business and Defense Services Administration, its Automobile and Transportation Equipment Division, and its Office of Distribution.

Q.—One of the problems facing service shops is a shortage of trained mechanics, which means less maintenance for some cars and perhaps an increase in traffic accidents. Is there anything the government can and should do to help correct this shortage?

A.—Certain opportunities for training are provided by the Smith-Hughes Act and it is possible that through this means an additional labor supply might be provided. Other assistance can be given this problem by encouraging motorists to give regular attention to the condition of their vehicle and to accept responsibility for having it always in safe condition. This latter point is emphasized in the recent revision of the Action Program of the President's Committee for Traffic Safety.

Q.—Some 33 of the 50 states do not now require periodic safety inspection of motor vehicles. Do you favor mandatory vehicles inspection? Do you believe the federal government should step in? If so, how?

Continued on next page

building, in highway financing and taxing, and in many other programs affecting car dealers and service firms. In this exclusive interview with MOTOR AGE editor Frank P. Tighe, Mr. Martin tells his plans and beliefs.

An interview . . . *continued*

A.—Periodic safety inspection of motor vehicles is an essential component of the complete traffic safety program. We should like to see more widespread adoption by the states of official motor vehicle inspection programs but would not agree that this is a matter for federal regulation.

Accident statistics have not led us to believe that the motor vehicle is fundamentally defective in very many instances, but it does seem logical that vehicles would be more reliable and safer if they were subject to regular and thorough inspection. The operators of commercial fleets have found that well maintained vehicles not only bring returns in accident reduction but in lower operating costs as well.

Q.—Secretary Hodges has named a new transportation planning group, working under you to study among other problems mass transportation in metropolitan areas. Although the study is just beginning, do you foresee solutions which will reduce or increase the use of private cars in solving this problem?

A.—While the members of the planning group are knowledgeable and experienced experts in the fields of transportation and urban problems, I am sure they are approaching this study with open minds. Neither they nor I would want to speak with any positiveness now about specific solutions to problems, or their effects. A general increase in the use of private automobiles seems inevitable in view of the expected continuing increase in population and leisure time, and the hoped-for continuing prosperity of this country and avoidance of war.

In the large metropolitan areas, where mass transit can perform at its best, the growing daily tide of automobile travel to and from the central business district could be stayed if mass transit is developed to the point where its speed, economy, and comfort attract the general public. However, a considerable proportion of trips, even in metropolitan areas, are widely diffused both as to purpose and as to origin and destinations, and rail transit cannot offer any great prospect of serving such trips.



"Periodic safety inspection of motor vehicles is an essential component of the complete traffic safety program."

Q.—Getting to the highway program, where do we stand today?

A.—A total of 10,440 miles of the 41,000-mile Interstate System are now improved and open to traffic. In addition, 4,126 miles of the Interstate System were under construction on Dec. 31, 1960, and engineering or right-of-way acquisition was under way on 10,032 miles. Thus, some form of work was completed or under way on 24,598 miles or about 60 percent of the 41,000-mile system. Work was not yet started on 16,402 miles.

For the ABC program (highways which are not a part of the interstate network), projects have been completed since July 1, 1956, costing \$7.5 billion, including nearly 113,000 miles of construction contracts. Projects under way or authorized on Dec. 31, 1960, totaled over 21,000 miles costing \$2.8 billion.

Q.—Is the highway program lagging? If so, what is needed to get it rolling again?

A.—The highway program is on schedule in relation to the revenue available in the Highway Trust Fund. Revenues received by the fund since July 1, 1956 have totaled \$10.2 billion, and expenditures have totaled \$10 billion.

Interstate funds totaling \$25.4 billion have been authorized to be apportioned for the fiscal years through 1969. The 1962 fiscal year apportionments made last August included \$2.2 billion for the Interstate System.



"I agree with the automotive industry economists that a 7.5 million automobile year will be achieved in the '60s."



"When 1972 comes, I am sure we will be looking ahead at the needs for the next few decades beyond, just as we did in 1956."

Revenues for the Highway Trust Fund under existing legislation are adequate to cover the \$25.4 billion authorized for the Interstate program, with an estimated surplus of \$2.3 billion after continuing the ABC program at the \$925 million annual rate authorized for the next two fiscal years.

This is a sizable program, but it will not complete the Interstate System by 1972. Additional Interstate funds of \$11.5 billion are needed for completion of the \$37 billion program in accordance with estimates submitted to Congress.

In addition to the Interstate apportionments, the President's proposed program provides for ABC and other programs totaling \$17.0 billion through fiscal 1972. The additional revenues needed for this program total \$9.7 billion.

Q.—Independent repair shops and service stations are often among the firms badly hurt economically when highways are relocated. Do you favor a government program of relocating these small businessmen in such cases?

A.—We are not at this time in a position to provide direct financial assistance to either individuals or businesses in relocating as a result of highway projects. In the case of business relocations or the effect on existing businesses of new highway locations, there are so many incalculable factors that we would have to take a very long hard look at any innovations in this field.

A consideration of this problem should begin with the advance planning of highways. Many major highway route locations are planned as much as 10 years in advance. Right of way, under existing Federal statutes, may be purchased as much as seven years in advance.

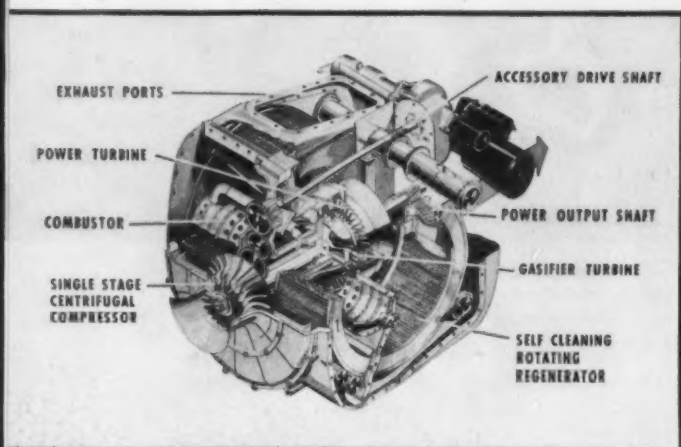
With so much advance notice, a prudent businessman, with the aid of his trade association, chamber of commerce, or local planning commission, should be able to find a suitable relocation plan. I should point out that a new highway creates new business opportunities for which the person already on or near the scene should be able to take advantage. ■

"This Administration is getting the country on the move. With more jobs and more people earning more money, industry can produce more goods and sales will rise."



GAS TURBINE REPORT

Continued from page 57



General Motor's GMT-305 Gas Turbine Engine

The nearest thing to a cooler is a small oil cooler that thermostatically controls the lubricating oil temperature. The electrical and ignition systems are extremely simplified. They consist of a conventional storage battery, combination starter, generator, ignition coil, one or two spark plugs (used only for starting) and a breaker point assembly.

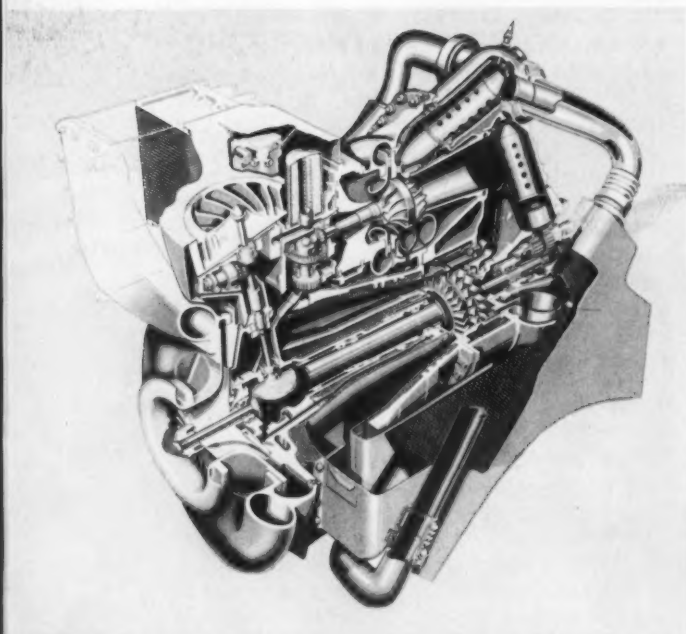
It can operate on any liquid hydrocarbon fuel such as: unleaded gasoline, kerosene, jet fuel, diesel fuel and many blends of distillate fuels. The engine can operate on leaded fuels except that its life will be shortened by an undisclosed amount of time. The engine is unaffected by climatic conditions of heat and cold. Its cold weather starting characteristics are greatly superior to that of any engine known today. Some turbines have started and been run up to full speed in less than ten seconds. Others have done this in much less time. Turbine speeds go higher than 40,000 revolutions per minute. This is reduced by reduction gears to around 3600 RPM at the out-put drive flange.

Turbine Road Tested

One manufacturer installed a turbine in a test car and after over 500 miles of road testing, reports 19.4 miles per gallon using various type fuels. However, there is still much to be accomplished in improving its design and efficiency. In order for the gas turbine to be accepted in volume in the automotive market it must do more than equal the performance of the gasoline engine. It must surpass it in performance and most important, it must leap-frog the cost and production barricade. Yet, factory men are optimistic about overcoming this barrier.

Current cost and production studies indicate many promising bright spots. Tooling costs appear to be favorable for the turbine engine. As for service in the field, this seems to be the brightest picture of all. Its simplicity and reliability have been proven in actual experience with trucks, aircraft and other forms using turbine power.

Then too, many skilled aircraft technicians will be available to the service field in the future. These men are now servicing similar units in the armed forces. By the time it makes its entrance into the automotive field, these trained men will be in the labor market.



Ford Motor Company's 704 Gas Turbine Engine

Thinking Out Strong



BUSINESS IS BUSTIN' OUT ALL OVER

PEOPLE are using their cars and car use means care, service and repairs. In which case, you're the doctor.

Service business is beginning to bloom all over as holiday time approaches. No man feels confident in driving a car he knows is unsafe or in need of any kind of attention. That's why there is an expected steady rise in the automotive service business.

To look at the rise in business we've asked other Editors of Chilton magazines for their comments on business in their fields. (*Motor Age* is one of nineteen Chilton publications.) Here's what they say:

"For the second half of 1961 business conditions seem to be working with, rather than against the retailer, in his pursuit of profits. Some merchants, lately, have succeeded in topping their year-ago showings." Frank X. Kiefer, Editor, *Department Store Economist*.

In reappraising the outlook, Hartley W. Barclay, Editor and Publisher of *Automotive Industries* says, "In total, the outlook is now much brighter than it was at the beginning of the first half (of 1961). Evidences of real progress are seen in reports on passenger cars, trucks, farm equipment, engines, military vehicles . . ."

"As the weather has warmed, so has the outlook for the steel industry," reports George F. Sullivan Editor of *The Iron Age*. "The recovery in steel operations continues to follow the orderly, moderate, and broad recovery pattern which be-

gan early in March. The usual summer slump is expected to be less severe this year. And the industry will show increasingly higher operating rates in the last two quarters of the year."

Maurice E. Cox, Editor and Publisher of *The Optical Journal* on the matter of eyecare has said, "Personal consumption expenditures have been lagging somewhat, and this is true of expenditures for eyecare. Nonetheless, the second quarter of 1961 brought an upturn for the ophthalmic field. Improvement is expected to continue and take a higher upturn in the late summer and early fall."

In the field of Liquid Petroleum Gas, William Clark, Editor of *Butane-Propane News* writes enthusiastically, "Sales of Liquefied Petroleum Gas have set new highs every year for thirty-seven straight years. Sales in 1960 increased an estimated 10 per cent. Underground storage capacity for LPG increased 17 per cent. All indications are that sales will again register a new high in 1961."

John J. Reilly, Editor of *Boot and Shoe Recorder* advises, that, "Inventory liquidation, bad weather and uncertainty over toe shapes in women's shoes cut January through April shoe production by 2.8 per cent from the same period 1960. A continuation of this rate, 206.5 million pairs produced for the first 4 months would indicate an output of 615 million pairs for the year against 596.7 million for '60. This would make

Continued on page 116

Faithfully yours,

Frank P. Tighe

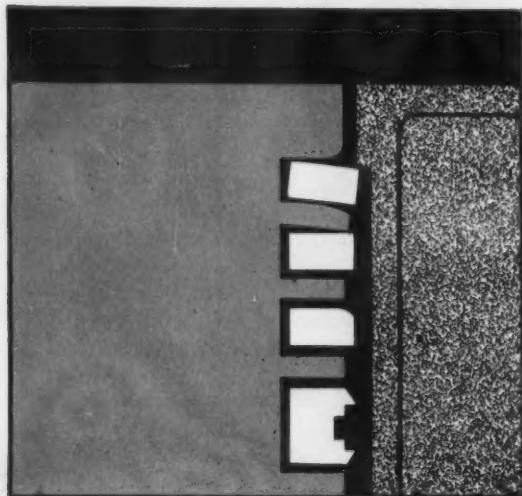
Advice on Proper Procedure for Removing Piston and Rod Assembly

Piston Damage

SERVICE personnel should make it a point to examine the lower section of the top ring groove on any piston where a burned out connecting-bearing is to be replaced. If the bearing failed and the vehicle ran for any length of time after the failure, it is more than likely that the piston will be damaged. This is particularly true on engines with high mileage.

When the lower half of the connecting-rod bearing is reduced in size, it allows the piston to move further up in the cylinder bore to a point where the top compression ring will strike the cylinder ridge at the top of the cylinder or sleeve. As a cylinder wears, the upper outer corner of the top ring wears to fit the rounded shoulder formed at the top of the ring travel. And should the piston travel higher than its normal travel (due to a loose rod), it will force the top compression ring to strike against the protruding cylinder ridge, causing a clicking noise and in some

Ring land damaged and piston ruined by attempting to remove piston without first removing the ridge on top of cylinder.



By Paul A. Murphy
Editor of Chilton's
Flat Rate and
Auto Repair Manuals

cases bends or breaks the second land, thus locking second ring in the groove.

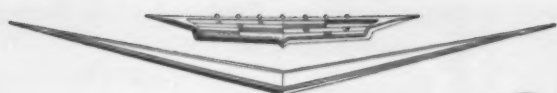
Before attempting to remove the piston and rod assembly the cylinder ridge should be removed with a ridge reamer. If the ridge isn't removed first, there is the possibility of bending or breaking the second land while pushing the piston up out of the cylinder, because if there is just enough of an overhanging ridge to be felt with a finger nail, the ridge will be struck by the top of the top ring as the piston is pushed upward to remove from the cylinder. When the ring is stopped by the ridge, the second land is brought sharply in contact with the stationary ring. This action usually bends or breaks the second land of the piston.

Valve Head Breakage

Some fleet operators have had trouble with exhaust valves breaking at the neck or junction of the stem. When this problem first came to light it was thought that excessive engine speed was responsible for exhaust valve failures. A leading valve manufacturer has a more logical explanation for this failure that also ties in with excessive engine speed.

According to the valve manufacturer, the failure is caused by seating the valve at a speed or velocity that imparts a load too great for the material to withstand. Chief among the causes for excessive closing speed is valve

Continued on page 102



Cadillac



The unmistakable stamp of Greatness!

Continuing its historic tradition of undisputed leadership in the fine car field, Cadillac is currently enjoying the most brilliant acceptance since its founding at the turn of the century. For in all the things that make a car illustrious, Cadillac stands pre-eminent.

Cadillac engineering supremacy is so widely acknowledged that a new Cadillac model is automatically accepted by the public as being the highest achievement to date in personal transportation.

Public approval of Cadillac styling is undoubtedly a major factor in this success. And it has been for years—for Cadillac styling policy has been one of constant

refinement with continuing identity. A Cadillac never obsolesces itself from year to year.

And certainly high among the universally recognized qualities of Cadillac is its unbroken association with the finest in craftsmanship. It has been truly said that the highest praise that can be accorded any product in any field is to declare it the Cadillac of its kind.

Surely this adds up to greatness in the fullest sense of the word. And just as surely as the past has built it, the future will enhance it.

Cadillac dealers and salesmen can well be as confident of tomorrow as they are securely proud of today.

CADILLAC MOTOR CAR DIVISION • GENERAL MOTORS CORPORATION

TIPS FOR THE BODY SHOP

Dipping File In Water Removes Aluminum Chips

When repairing aluminum body components, filing the aluminum quickly clogs the file, slowing the work and subjecting the metal to scratching. Do a better and faster filing job by dipping the file occasionally in a can of water kept handy to the work. This method keeps the file cleaner by floating the aluminum filings right off the file. *E. Mayover, 1601 14th St., W., (U.S. 41), Bradenton, Florida.*

Repairing And Sealing Window Leaks

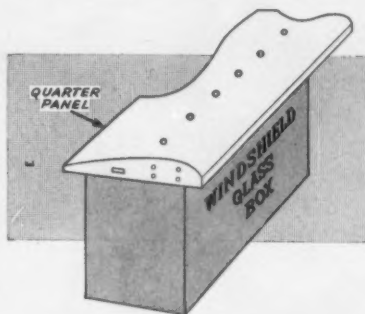
Window Leaks: Where glass is set in rubber and water leaks appear. **Fix:** Apply glycerine between the two surfaces. This can be simplified by using a plastic bottle with a nozzle extension. The glycerine will soften the rubber surface slightly and result in better sealing. *P. L. Bailey, 1534 Harding Drive, Wickliffe, Ohio.*

Cones Used To Sand Odd Contours In Bodies

Leading in the L. R. quarter of a '59 Chev. is an awkward job. As all metal men know this is one of those nasty contours that is hard to use a file on. Sandpaper is about the only answer for final finish in a spot like this, however, sandpaper on a file or a block does not get the desired results. We have found that the best & quickest results arrive from a piece of sandpaper wrapped in one or two round

tapered cloth sanding cones of the type found in most body shops. These cones when slipped one inside the other form the desired rigidity but also allows you to get the desired contour due to their flexibility. Also the grit on the outside of the cone keeps the sandpaper from slipping and allows it to be operated with one hand. *R. C. Allen & Glen Engle, 731 Blaine Ave., Elkhart, Ind.*

Empty Windshield Boxes Are Handy In Body Shops



Keep one or two empty windshield boxes in the shop. They make a fine portable work bench for metal finishing. It is handy for painting the new panels before assembling them on the cars. Use the box for storing new parts for cars being worked on. Excellent storage place for broken die cast grills, light housings, etc. until ready to take to the junk dealer. By having something in the box such as mentioned, gives added weight to keep box from falling over while working atop of it. *John G. Van Portfliet, William Voet Co., 17 Market Ave., S.W., Grand Rapids 2, Mich.*

Fitting A Rear Bumper On Ford Pick up Trucks

I would like to submit an idea. I have run into several owners of Ford pickup trucks which came out without rear bumpers. The front bumper from a junked '49 or '59 Dodge car makes an ideal bumper for these pickups. It is practically made to fit especially the '55 and '56 models. If you buy the bumper with the mounting brackets it can be installed on your '55 or '56 Ford pickup in about an hour's time. The only modification necessary is to reverse the tail light brackets from left to right so as to move them up about an inch, then cut the top corner of the bracket off slightly. *Harold O. Peterson, Hartzell Motor Co., 4936 France Ave., Minneapolis, Minn.*

Use Plastic Covers To Protect Units From Overspray

We have been doing a lot of appliance work; washers, refrigerators, etc. To keep them clean and from overspray, I cover them with an old blanket on plastic and hold this in place by cutting 3 inch bands from old truck inner tubes and slip over padded objects. Band also have many other uses. *Robert Henzie, Perrigo Body Shop, 1010 Center St., Santa Cruz, Calif.*

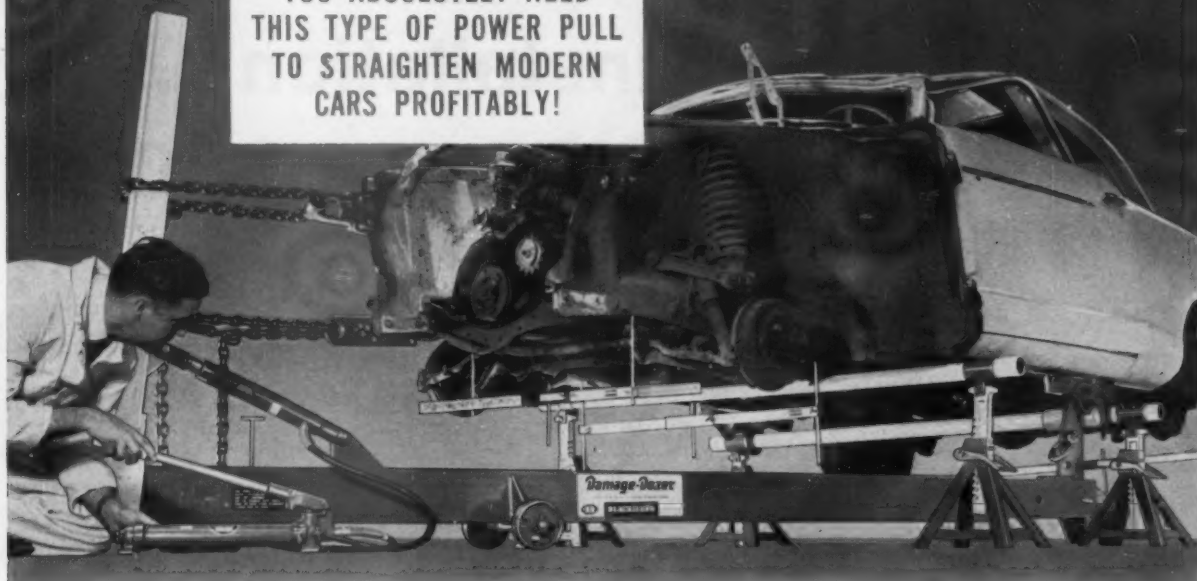
BODY SHOP TIPS are worth

\$7.50

If you've developed an Idea that has helped you to do body and fender work or painting better or faster, it may be worth money. Jot down the idea and, if necessary, make a rough sketch. Sometimes a snapshot will help. Just make the description of your BODY SHOP TIP clear, and if it is used, you'll receive a check for \$7.50.

To the man who has
"YES POWER" on
equipment purchases:

YOU ABSOLUTELY NEED
THIS TYPE OF POWER PULL
TO STRAIGHTEN MODERN
CARS PROFITABLY!



And now on a PAY-AS-YOU-EARN PLAN you can

BANK BIG *Dozer* PROFITS

(Only a Blackhawk "total package" SYSTEM up-dates your shop this way)

Choose from this
big family of

5 Dozers

There's a portable Dozer or combination of
Dozers for every shop or budget!

Dozer System	Work Range	User* Monthly Price Payment
EK-60 DAMAGE-DOZER	Repairs all frame and body damage	\$994 \$38.50
EK-40 UNIT-DOZER	Repairs unit body damage and wide range of frame damage	\$689 \$26.60
EK-20 POWER-DOZER	Handles all external sheet metal damage	\$390 \$22.84
EK-10 PULL-DOZER	Pulls sheet metal sections, pillars, posts, rocker panels	\$288 \$16.68
EK-7 BANTAM-DOZER	Speeds up high-frequency body, fender and sheet metal pulls	\$220 \$14.27

*Suggested user prices. Low down payments.
Prices subject to change without notice.

Chances are 10-to-1 that the informed men in your shop already know that traditional techniques for straightening cars are dead as yesteryear's buggy whips! Unitized bodies, compacts, unusual frames and modern car designs demand new methods. And you can easily modernize to put the necessary new methods to work for you efficiently — but only with a Blackhawk "total package" Dozer system.

NOTE: The Blackhawk "total package" system includes the basic Dozer tool, its hydraulic equipment, gages to determine damage and guide correction, essential tools and exclusive attachments to make the equipment useful on all types of cars — plus diagnostic, instructional material and convenient finance plans.

But THE BOSS looks at both money and method. He must ask: "What's my outlay, my added overhead, my chance for profit?" Answer: For all practical purposes your net cost is nothing and profits can be phenomenal. Why? The low down payment can be offset by immediate EXTRA earnings. And low monthly payments are most likely to be but a fraction of your NEW INCOME. And only the Blackhawk "total package" system can put your men and your money to work INSTANTLY! So call your Blackhawk Porto-Power jobber today and Dozerize for profits!



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Write BLACKHAWK AUTOMOTIVE DIVISION, Milwaukee 46 Wis., for new free 20-page Porto-Power catalog and valuable repair manuals.

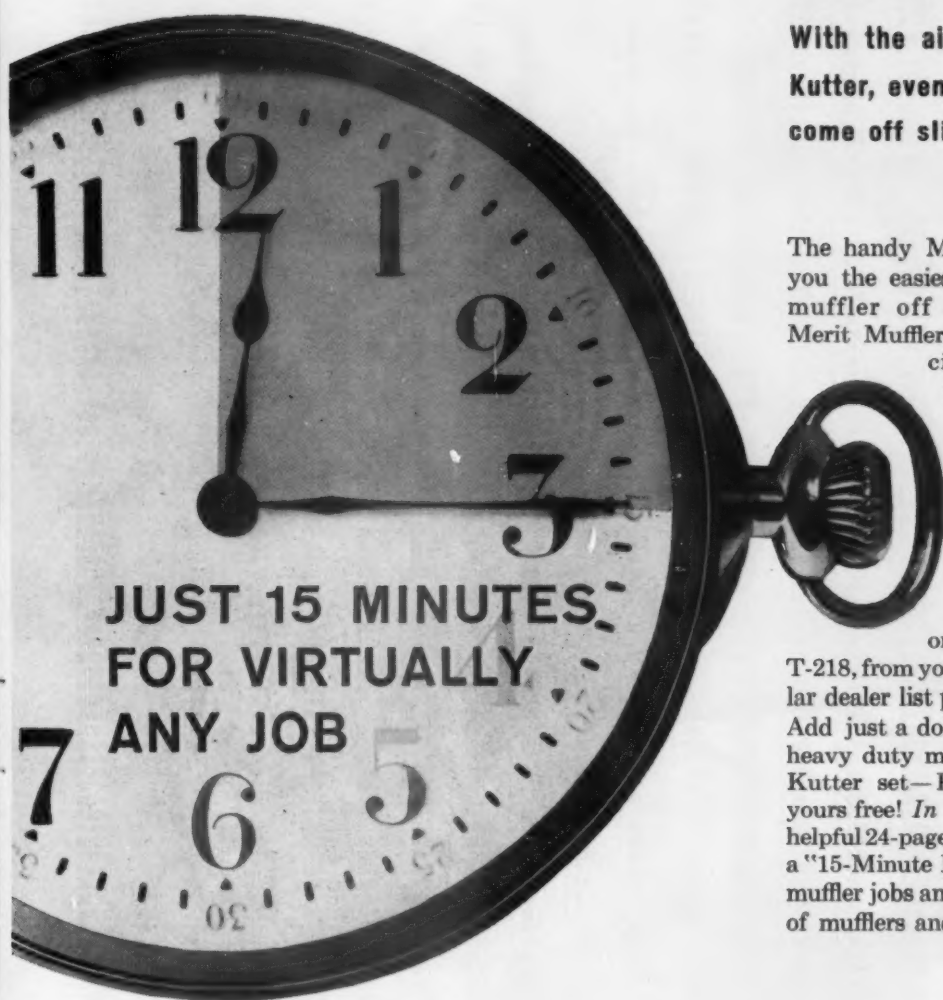
MERIT.

your Blue Chip line

**Now you can do high-speed
muffler installations...
and make \$30000**



extra a year!



**JUST 15 MINUTES
FOR VIRTUALLY
ANY JOB**



With the air-powered Merit Muffler Cutter, even rusty beat-up mufflers come off slick and quick.

The handy Merit Installation Guide tells you the easiest, quickest way to get any muffler off and a new one on. The Merit Muffler Cutter makes every job a cinch — enables you to do even the toughest ones in just 15 minutes.

You can average a muffler job a day—and, at just 300 working days a year, that brings in more than \$3000!

It's easy to become a Merit muffler expert. Just order the Cutter Pack Special, T-218, from your Merit jobber. Pay the regular dealer list price for the mufflers (\$53.95). Add just a dollar, the bargain price of the heavy duty metal tool box, and the entire Cutter set—Cutter and three blades—is yours free! *In addition*, you receive *free* the helpful 24-page Merit Installation Guide, plus a "15-Minute Installation" banner! Do four muffler jobs and you wash out the *entire* cost of mufflers and tool, with dollars to spare!

MERIT

MUFFLERS AND PIPES

Dept. 15-F, 619 Smith St., Toledo 1, Ohio

*

Total.....	March, 1961	22440	13257	131864	7500	13781	19219	106438	928	2634	9956	25941	25656	30248	29896	5428	784	34067	480067
Total.....	March, 1960	22852	14081	158420	7381	5192	33063	125367	1500	2080	14563	31532	42906	36317	36336	10794	3965	50310	596669
Total.....	3 Months, 1961	59955	35543	341043	19596	36735	49806	288925	2848	7925	26945	70739	67729	81556	70824	16479	2324	86433	1268567
Total.....	3 Months, 1960	62275	37828	388821	19184	5192	78920	340920	2478	6045	39687	82034	103590	90590	92100	23906	10296	133498	1280982

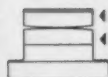
MOTOR AGE • June 1961



new

optical precision
mirror smooth

**POLISHED
TUNGSTEN
CONTACTS**



BOTH CONTACTS
have
EXTENDED RADII
for maximum
surface contact

another advance in
*"the Crown Jewels
of Ignition"*

brings you a new,
never-before possible
freedom
from blemishes
pitting
misalignment

it all adds up to
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and extra value
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telescopes are examples of precision
tolerances and perfection such as are
now embodied in the new mirror smooth
contacts in Filko Contact Sets for cars,
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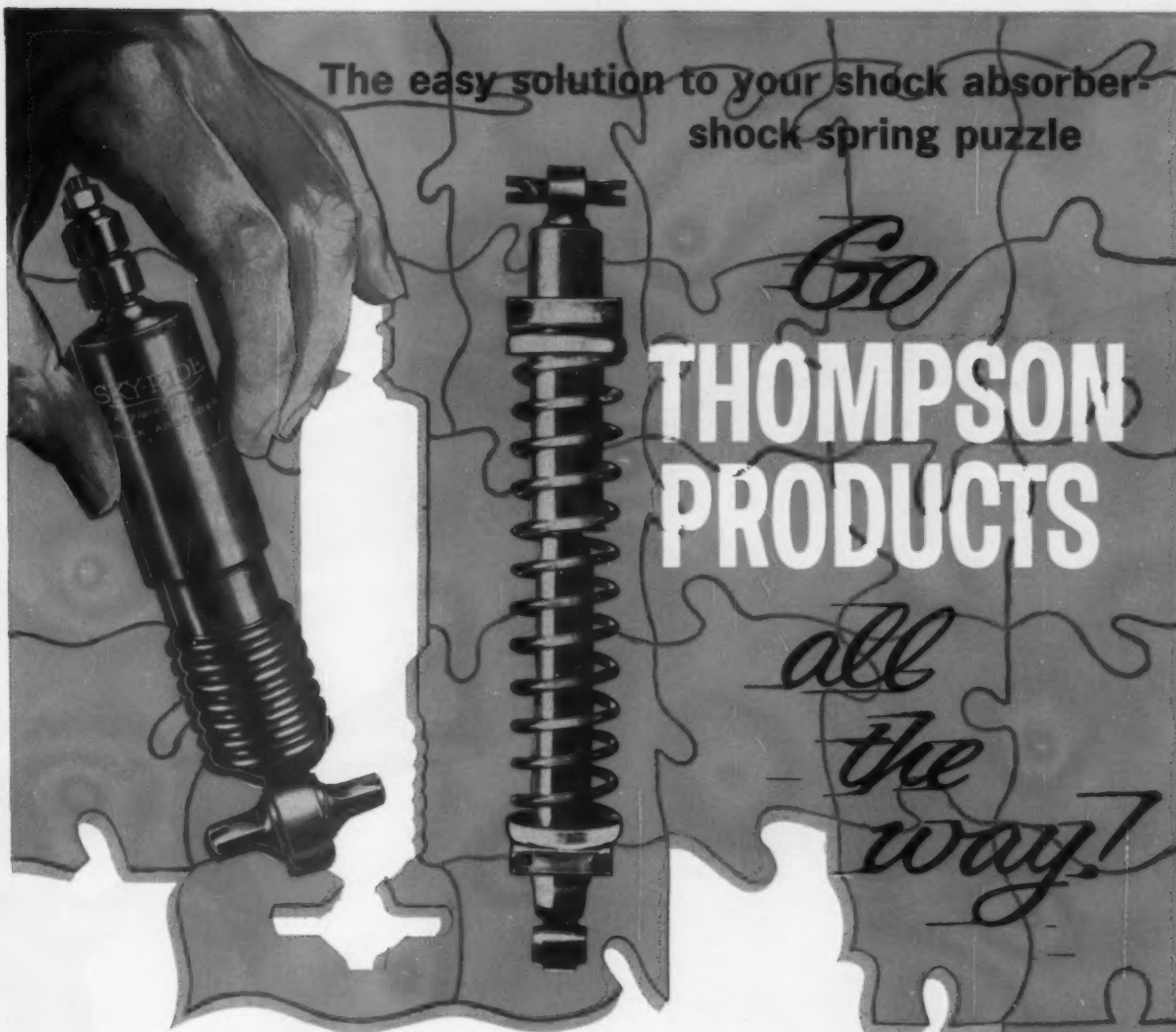


CURRENT PASSENGER CAR PRICE, WEIGHT AND BODY TABLE

Following are prices at factory for cars with standard equipment as of May 22, 1961
State or local taxes, transportation and finance charges and optional equipment are extra.

BODY MAKE AND MODEL	AMERICAN MOTOR CORP.				BODY MAKE AND MODEL	CHRYSLER CORP., cont'd				BODY MAKE AND MODEL	FORD MOTOR CO., cont'd				BODY MAKE AND MODEL	GENERAL MOTORS CORP., cont'd											
	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charge	Suggested Price at Factory including Federal Taxes	Shipping Weight		List Price at Factory without Federal Taxes	Federal Taxes and Handling Charge	Suggested Price at Factory including Federal Taxes	Shipping Weight		List Price at Factory without Federal Taxes	Federal Taxes and Handling Charge	Suggested Price at Factory including Federal Taxes	Shipping Weight		List Price at Factory without Federal Taxes	Federal Taxes and Handling Charge	Suggested Price at Factory including Federal Taxes	Shipping Weight								
AMERICAN MOTOR CORP.																											
RAMBLER																											
DeLuxe																											
Sedan, 2d.....	1684	161	1845	2804					Sedan, 2d.....	2201	216	2417	3549	Sta. Wagon.....				2075	....	2630							
Sedan, 4d.....	1730	164	1894	2841					Sedan, 4d.....	2251	220	2471	3616	Coupe.....				1810	178	1965							
Sta. Wagon, 2d.....	1902	178	2080	2952					Sta. Wagon, 2d.....	2251	220	2471	3616	Coupe.....				1880	179	2039							
Sta. Wagon, 4d.....	1948	181	2129	2995					Sta. Wagon, 4d.....	2251	220	2471	3616	Sta. Wagon.....				2135	196	2331							
Super-6																											
Sedan, 2d.....	1763	167	1930	2806					Sedan, 2d.....	2367	228	2605	3682	Coupe.....				2010	191	2201							
Sedan, 4d.....	1809	170	1979	2844					Sedan, 4d.....	2417	232	2649	3684	Coupe.....				2010	191	2201							
Sta. Wagon, 2d.....	1981	184	2165	2954					Hardtop, 2d.....	2423	233	2686	3696	Coupe.....				2010	191	2201							
Sta. Wagon, 4d.....	2027	187	2214	2997					Hardtop, 4d.....	2483	238	2721	3682	Coupe.....				2010	191	2201							
Custom-6																											
Sedan, 2d.....	1884	178	2062	2857					Sta. Wagon.....	2682	244	2906	....	Spts. Wagon.....				2433	218	2651							
Sedan, 4d.....	1929	180	2109	2894																	CORVETTE						
Sta. Wagon, 2d.....	2102	193	2295	2912																	Sportscar.....				3619	315	3834
Sta. Wagon, 4d.....	2148	196	2344	2951																	OLDSMOBILE						
Convertible.....	2170	199	2369	....																	F-85						
Custom 400																											
Sedan, 4d.....	2016	183	2199	2606					Sedan, 2d.....	2475	238	2711	3680	Club Coupe.....				2125	205	2330							
Convertible.....	2267	202	2459	2745					Sedan, 4d.....	2525	240	2765	3762	Del. Sed., 4d.....				2175	200	2384							
Classic-6																											
DeLuxe									Hardtop, 2d.....	2531	241	2772	3694	Cutlass, 2d.....				2395	226	2621							
Sedan, 4d.....	1916	180	2098	2815					Hardtop, 4d.....	2591	246	2837	3790	Sta. Wagon, 2s.....				2425	229	2654							
Sta. Wagon, 4d, 2s.....	2233	204	2437	3047					Sedan, 2d.....	2622	247	2869	3777	Sta. Wagon, 3s.....				2525	237	2762							
Super									Hardtop, 2d.....	2628	248	2876	3709	Del. Sta. Wagon.....				2580	239	2799							
Sedan, 4d.....	2071	197	2268	2933					Hardtop, 4d.....	2668	253	2911	3795	Del. Sta. Wagon, 4s.....				2650	247	2997							
Sta. Wagon, 4d, 2s.....	2354	218	2572	3066					Convertible.....	2680	246	3126	3872	Series 88													
Sta. Wagon, 4d, 3s.....	2473	224	2697	3121					Sta. Wagon.....	2852	252	3222	4115	Sedan, 2d.....				2574	261	2935							
Custom									Colony Park.....	2870	266	3118	4131	Celeb. Sedan.....				2634	266	2900							
Sedan, 4d.....	2206	207	2413	2963																	Hol. Coupe.....				2687	260	2956
Sta. Wagon, 4d, 2s.....	2489	228	2717	2969																	Hol. Spt. Sed.....				2789	275	3034
Sta. Wagon, 4d, 3s.....	2608	234	2842	3048																	Convertible.....				2881	283	3284
Custom 400																					Fiesta, 2s.....				3065	296	3363
Sedan, 4d.....	2346	217	2563	2873																	Fiesta, 3s.....				3165	306	3471
Classic-V8																					Super 88						
Super																					Celeb. Sedan.....				2881	295	3176
Sedan, 4d.....	2191	206	2397	3255																	Hol. Coupe.....				3020	305	3325
Sta. Wagon, 4d, 2s.....	2474	227	2701	3376																	Hol. Spt. Sed.....				3092	310	3402
Sta. Wagon, 5d, 3s.....	2593	233	2826	3430																	Convertible.....				3268	324	3682
Custom																					Fiesta, 2s.....				3336	329	3685
Sedan, 4d.....	2296	214	2512	3262																	Fiesta, 3s.....				3436	337	3773
Sta. Wagon, 4d, 2s.....	2581	235	2816	3378																	Celeb. Sedan.....				3533	354	3887
Sta. Wagon, 4d, 3s.....	2700	241	2941	3437																	Hol. Sedan.....				3658	363	4021
Custom 400																					Hol. Coupe.....				3715	368	4083
Sedan, 4d.....	2438	224	2662	3283																	Hol. Spt. Sed.....				3788	373	4159
Ambas-V8																					Convertible.....				3975	387	4382
Super																					PONTIAC						
Sedan, 4d.....	2323	214	2537	3361																	Tempest						
Sta. Wagon, 4d, 2s.....	2606	235	2841	3483																	Std. Coupe.....				1925	188	2113
Sta. Wagon, 5d, 3s.....	2725	241	2966	3533																	Sedan, 4d.....				1975	192	2167
Custom																					Cus. Coupe.....				2095	202	2287
Sedan, 4d.....	2458	224	2682	3380																	Sta. Wagon, 6p.....				2225	213	2438
Sta. Wagon, 4d, 2s.....	2741	245	2986	3495																	Catalina						
Sta. Wagon, 5d, 3s.....	2860	251	3111	3561																	Spt. Sedan, 2d.....				2390	241	2631
Custom 400																					Sedan, 4d.....				2456	246	2702
Sedan, 4d.....	2570	233	2812	3387																	Spt. Coupe.....				2515	251	2768
CHRYSLER CORP.																											
NEWPORT																											
Sedan, 4d.....	2683	271	2954	3710																	Vista Sed., 4d.....				2598	256	2842
Hardtop, 2d.....	2750	275	3025	3680																	Vista Sed., 4d.....				2605	273	3078
Hardtop, 4d.....	2824	280	3104	3730																	Sta. Wagon, 6p.....				2825	274	3099
Convertible.....	3137	305	3442	3760																	Sta. Wagon, 6p.....				2825	282	3207
Sta. Wagon, 2s.....	3230	311	3541	4070																	Ventura						
Sta. Wagon, 3s.....	3305	317	3622	4155																	Spt. Coupe.....				2706	265	2971
Windsor																					Sedan, 4d.....				2777	270	3047
Sedan, 4d.....	2920	298	3218	3730																	Star Chief						
Hardtop, 2d.....	2999	304	3303	3710																	Sedan, 4d.....				2736	267	3003
Hardtop, 4d.....	3059	306	3367	3765																	Vista Sed., 4d.....				2899	277	3136
New Yorker																					Bonneville						
Sedan, 4d.....	3752	371	4123	4055																	Spt. Coupe.....				2970	286	3255
Hardtop, 2d.....	3800	375	4175	4065																	Vista Sed., 4d.....				3040	291	3331
Hardtop, 4d.....	3880	381	4261	4100																	Convertible.....				3175	301	3476
Convertible.....	4188	404	4592	4070																	Sta. Wagon.....				3225	305	3530
Sta. Wagon, 2s.....	4348	416	4764	4425																	STUDEBAKER CORP.						
Sta. Wagon, 3s.....	4448	423	4871	4455																	Lark-8						
300-G																					DeLuxe						
Hardtop, 2d.....	4852	459	5311	4260																	Sedan, 2d.....				1757	178	1935
Convertible.....	5352	489	5841	4315																	Sedan, 4d.....				1822	183	2005
DODGE DART																											
Seneca-V8																					Sta. Wagon, 2d.....				2085	204	2290
Sedan, 2d.....	2187	210	2397	3470																	Sta. Wagon, 4d.....				2160	210	2370
Sedan, 4d.....	2235	214	2449	3515																	Regal						
Sta. Wagon, 4d, 6p.....	2575	240	2815	3920																	Hardtop, 2d.....				1963	....	2682
Pioneer-V8																					Sta. Wagon, 4d.....				2299	....	2909
Sedan, 2d.....	2310	220	2530	3460																	Convertible.....				2331	223	2554
Sedan, 4d.....	2355	223	2578	3510																	Lark-V8						
Hardtop, 2d.....	2382	225	2607	3500																	DeLuxe						
Sta. Wagon, 4d, 6p.....	2660	246	2906	3940																	Sedan, 4d.....				1875	195	2070
Sta. Wagon, 4d, 7p.....	2758	253	3011	4005																	Sedan, 4d.....				1940	200	2140
Phoenix-V8																					Sta. Wagon, 2d.....				2204	221	2425
Sedan, 4d.....	2482	233	2715	3535																	Sta. Wagon, 4d.....				2270	227	2505
Hardtop, 2d.....	2503	234	2737	3520																	Regal						
Hardtop, 4d.....	2568	238	2796	3555																	Sedan, 4d.....				2079	....	2966
Convertible.....	2736	252	2988	3580																	Hardtop, 2d.....				2161	217	2378
DODGE																											
Polara-V8																					Sta. Wagon, 4d.....				2417	....	3183
CHRYSLER CORP., cont'd																											
IMPERIAL																											
Continental																					Convertible.....				2449	240	2689
Convertible.....	5565	502	6067	4827																	Cruiser, 4d.....				2239	219	2458
Convertible.....	6186	547	6713	5215																	CORVAIR						
CORVAIR																											
Convertible.....	6500	580	7580	4827																	Coupe.....				1750	170	1920
Sedan, 4d.....	6186	547	6713	5215																	Sedan, 4d.....				1800	174	1972
FORD MOTOR CO., cont'd																											
MERCURY																											
Meteor-6																											
Sedan, 2d.....	2201	216	2417	3549																	Sedan, 4d.....				2251	220	2471
Sedan, 4d.....	2251	220	2471	3616																	Sedan, 2d.....				2367	228	2605
Sedan, 2d.....	2367	228	2605	3682																	Sedan, 4d.....				2417	232	2649
Sedan, 4d.....	2417	232	2649	3684																	Hardtop, 2d.....				2423	233	2686
Hardtop, 2d.....	2423	233	2686	3696																	Hardtop, 4d.....				2483	238	2721
Hardtop, 4d.....	2483	238	2721	3682																	Sta. Wagon.....				2682	244	2906
Sta. Wagon.....	2682	244	2906	....																	Meteor-8						
Meteor-8																											
Sedan, 2d.....	2369	224	2633	3647																	Sedan, 2d.....				2369	224	2633
Sedan, 4d.....	2399	228	2687	3714																	Sedan, 4d.....				2399	228	2687
Sedan, 2d.....	2475	238	2711	3680																	800						
Sedan, 4d.....	2525	240	2765	3762																	Sedan, 2d.....				2475	238	2711
Hardtop, 2d.....	2531	241	2772	3694																	Sedan, 4d.....				2525	240	2765
Hardtop, 4d.....	2591	246	2837	3790																	Hardtop, 2d.....				2531	241	2772
Sedan, 2d.....	2622	247	2869	3777																	Hardtop, 4d.....				2591	246	2837
Sedan, 4d.....	2628	248	2876	3709																	Monterey						
Hardtop, 2d.....	2668	253	2911	3795																	Sedan, 2d.....				2622	247	2869
Hardtop, 4d.....	2680	246	3126	3872																	Sedan, 4d.....				2628	248	2

The easy solution to your shock absorber-
shock spring puzzle



Thompson Products has solved the shock absorber-shock spring puzzle for you with the best low-cost package deal in the industry. You can now stock and install Sky-Ride shocks and shock springs as a compatible unit . . . or install the shock springs right over the car's existing shock absorbers.

Thompson Products Sky-Rides bring back new car riding comfort and steering ease. Sky-Ride's "Hydraulic Brain" construction includes:

- "Six-Way" Valving
- Sealed Piston Design
- Self-Adjusting Spring-Loaded Piston Rod Seal
- "Aeration-Free" Fluid Reserve Chamber
- Greater Oil Capacity
- Rubber Stone Shield
- All-Purpose Multi-Viscosity Fluid

Sky-Ride shock springs sold as a unit with Sky-Ride shocks cost less than competitive makes. When the spring only is installed over existing shocks—the price is but a small fraction of competitive units. What's more, Thompson Products shock springs are rubber coated for quiet operation and corrosion protection.

Talk to a Thompson Products jobber today! He's your direct line to full line chassis and front end parts.



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Replacement Division

Thompson Ramo Wooldridge Inc.
Cleveland 3, Ohio

Sold thru the world's finest jobbers



Here's a brand new way to stock and sell spark plug cable sets. It's called Select-O-Lenth, and there are several things you'll like about it. In the first place, Select-O-Lenth completely eliminates the need for the big inventory you've been forced to carry. You'll find that Select-O-Lenth will cut your inventory investment by at least 70%. As its name implies, Select-O-Lenth consists of several lengths of pre-cut ignition cables (24", 36", 44" and 54"), each equipped with one of three different spark plug terminals (90°, 135° and 180°) . . . a total of twelve parts numbers in all. With them, you can assemble ignition kits for 97% of the cars on the road today . . . in less than one minute each. When you stock Select-O-Lenth, you'll be supplied twelve handy, punch-out-center boxes containing all the parts you need (including clips), plus a Select-O-Lenth selection chart showing how to combine the parts for use with any make and model of car. You'll save time, save space, save money when you stock the savers' dozen. See your Autolite supplier right now about new Select-O-Lenth. You'll be glad you did.



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ACT NOW! Get this special bonus extra free. This compartmented utility cart to handle your entire Select-O-Lenth Assortment . . . or anything else you ask it to carry . . . is yours absolutely FREE from your Autolite supplier with your initial Select-O-Lenth order.



MONEY-SAVING...TIME-SAVING

IGNITION WIRE DO-IT-YOURSELF KIT

The New Minimum Wage Law

The New Minimum Wage Law will effect you whether you like it or not



By Neil Regeimbal,
Washington News Editor

THE government has stepped deeper into the businessman's pay-setting activities. Congress, after long and bitter fighting, has decided that almost all full-time workers must make at least \$1.25 an hour and must be paid time-and-a-half for more than 40 hours work a week.

Required By Law

For some 27.5 million workers, this minimum pay is required by law. But even those not covered—and this includes most workers in the car repair, sales, service industries—will in most cases also get raises as employers compete for available labor. In addition, there will be increased pressure for raises by higher-paid workers to retain existing pay spreads between high and low paid labor.

Thus, most firms in the car industries will feel the bite of gradually rising wages and increasing costs as a result of the new wage law, even though they are not directly covered.

The new law extends coverage of the wage-hour act to about 3.6 million workers previously exempt—mostly in large retail operations—and raises the minimum for the 24 million workers previously covered. It's now an even more complicated law than before.

First, are you covered? Here's the answer:

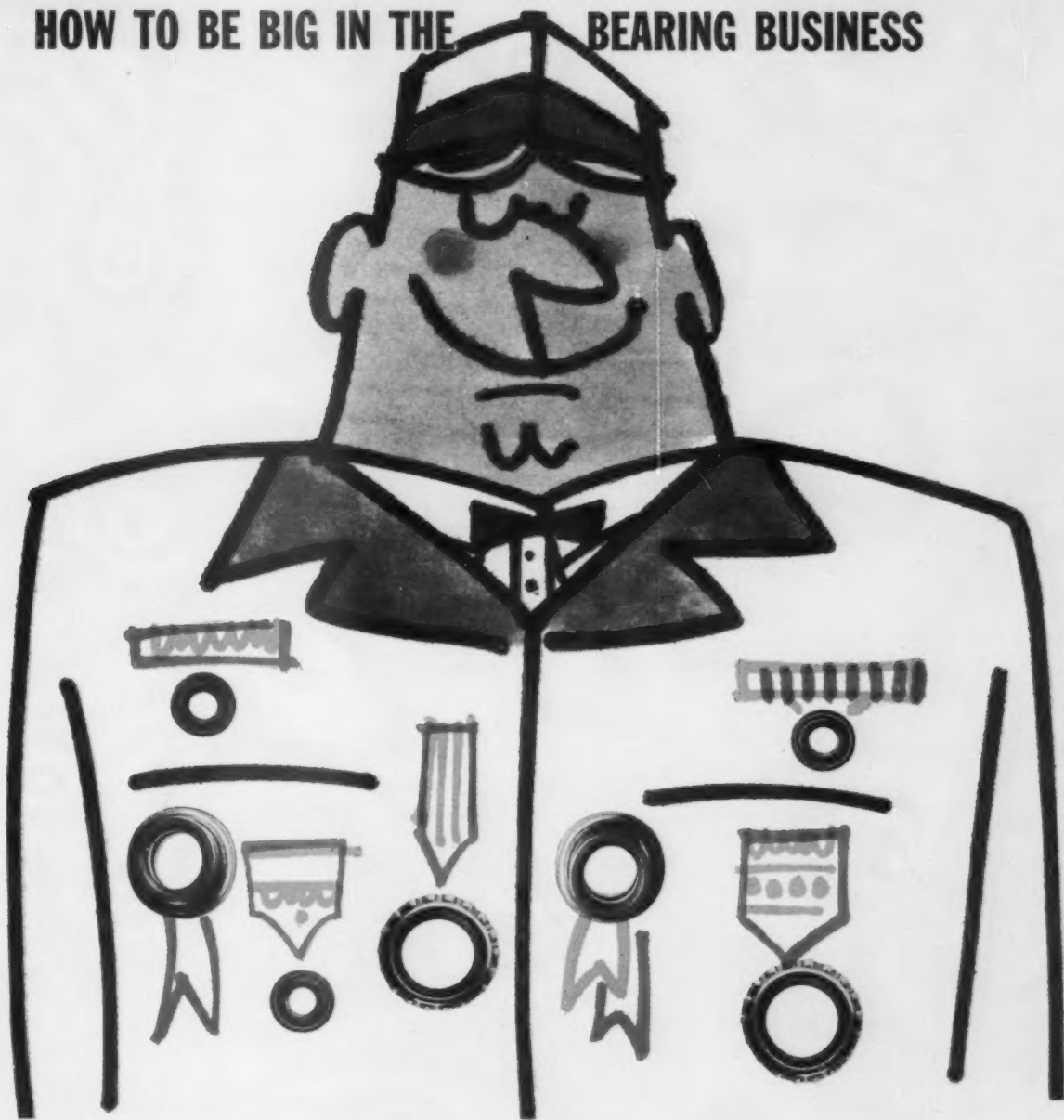
Car Dealers—No. In the final version, the historic exemption from the minimum wage-hour law for all employees of car dealers was retained. This also applies to farm implement dealers. (This must be the principal business of a firm to gain the exemption.) The exemption is even broader than before because it no longer requires a percentage of sales within a state.

Small Shops

Small Repair Shops—No, as long as you do not take in more than \$1 million a year and receive goods in interstate commerce for resale valued at more than \$250,000 a year. Single shops which are part of a chain grossing more than \$1 million are still exempt if they do not take in more than \$250,000.

Continued on page 120

HOW TO BE BIG IN THE BEARING BUSINESS



New Departure and Hyatt make it easy and profitable for you to be the wheel bearing expert in your neighborhood. Here's all you do! Remind customers that for safe driving, front wheel bearings should be serviced every 10,000 miles; keep an assortment of New Departure Ball Bearings and Hyatt Tapered Roller Bearings on hand so you will have the bearings you need for replacements on any car . . . millions of cars are factory-equipped with them.

No special equipment or training is required for bearing installation. And this is a good time to inspect and sell new grease seals, brake parts, wheel alignment and balancing, shocks, suspension parts and tires.

Your United Motors Service supplier has New Departure and Hyatt wheel bearing assortments that provide bearings for all popular requirements. You can start in the front wheel bearing business with one of these assortments with a minimum initial stock investment. . . . Call your United Motors Service supplier today.

HYATT  **NEW DEPARTURE** *quality bearings distributed through*







*you get
your
Chevy parts*

PDQ!
*at your Chevrolet
dealer's!*

When you want Chevrolet parts PDQ, the man to call is your Chevrolet dealer's parts manager. (PDQ means parts delivered QUICK—*genuine Chevrolet parts* made to fit and perform to Chevrolet's quality standards.) If you want even speedier action, there's just one thing left to do: *stock 'em*. Your Chevrolet dealer's the man to see for that, too. He will help you select a basic inventory of high-turnover parts so you can give *immediate service* to a good percentage of your Chevrolet customers.

With more Chevrolets on the road than any other make, it will pay you to make your Chevrolet dealer your partner in quick-action, quality service. That's a sure way to keep your customers satisfied....Chevrolet Division of General Motors, Detroit 2, Mich.



*There's no business like Chevrolet business...
make your Chevrolet dealer your partner in service!*

1961 Tune Up—Alignment Specifications

MAKE AND MODEL	No. of cylinders Bore and (In.)	ENGINE		TUNE-UP DATA										FRONT END ALIGNMENT			
		Maximum Brake H.P.	Spark Plug Make and Size (mm.)	VALVES				IGNITION						Steering Axis Inclination (Deg.)	Caster (Deg.)	Camber (Deg.)	Toe-in (In.)
				Seat Angle		Clearance Tappet Operating		Breaker Point Gap (In.)	Cam Angle (Deg.)	Spark Plug Gap (In.)	Timing T.C.						
				Inlet (Deg.)	Exhaust (Deg.)	Inlet (In.)	Exhaust (In.)										
AMERICAN MOTORS CORP.																	
Rambler.....American (Deluxe & Super)	6-3 1/2 x 4 1/4	90	CA-14	45	45	.016C	.018C	.020	39	.035	3B	8	0 to 1 1/2 P	1/4 N to 1/4 P	1/4 to 1/4	1/4 to 1/4	
.....American (Custom)	6-3 1/2 x 4 1/4	125	CA-14	45	45	.012H	.016H	.016	32	.035	8B	8	0 to 1 1/2 P	1/4 N to 1/4 P	1/4 to 1/4	1/4 to 1/4	
.....Classic	6-3 1/2 x 4 1/4	127	CA-14	45	45	.012H	.016H	.016	32	.035	8B	8° 11'	0 to 1 1/2 P	1/4 N to 1/4 P	1/4 to 1/4	1/4 to 1/4	
.....Classic	8-3 1/2 x 3 1/4	200	CA-14	30	45	.012H	.014H	.017	30	.035	TC	8° 11'	0 to 1 1/2 P	1/4 N to 1/4 P	1/4 to 1/4	1/4 to 1/4	
.....Ambassador	8-4 x 3 1/4	250	CA-14	30	45	Hyd	Hyd	.017	30	.035	TC	8° 11'	0 to 1 1/2 P	1/4 N to 1/4 P	1/4 to 1/4	1/4 to 1/4	
CHECKER MOTORS CORP.																	
Checker.....Superba, Marathon	6-3 1/2 x 4 1/4	85	Ch-18	30	44	.014H	.014H	.020	39	.020	4B	7	2P	1/4 P to 1 1/2 P	1/4 to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2
.....Superba, Marathon (Engine Option)	6-3 1/2 x 4 1/4	122	Ch-14	30	44	.017H	.023H	.020	39	.033	3 1/2 B	7	2P	1/4 P to 1 1/2 P	1/4 to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2
CHRYSLER CORP.																	
Chrysler.....Newport	8-4 1/2 x 3 1/2	265	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Windsor	8-4 1/2 x 3 1/2	300	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....New Yorker	8-4 1/2 x 3 1/2	350	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	1/4 P to 1 1/2 P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....300-G	8-4 1/2 x 3 1/2	378	AL-14	45	45	Hyd	Hyd	.017	30	.035	5B	6 1/2	1/4 P to 1 1/2 P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
DeSoto.....Polaris	8-4 1/2 x 3 1/2	265	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Dodge.....Polara (Engine Option)	8-4 1/2 x 3 1/2	285	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Dodge Dart.....Seneca, Pioneer, Phoenix	6-3 1/2 x 3 1/4	145	AL-14	45	46	.010H	.010H	.020	43	.035	2 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Seneca, Pioneer, Phoenix	8-3 1/2 x 3 1/4	230	AL-14	45	45	.010H	.018H	.017	30	.035	5B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Seneca, Pioneer, Phoenix (Engine Option)	8-4 1/2 x 3 1/4	305	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Seneca, Pioneer, Phoenix (Engine Option)	8-4 1/2 x 3 1/4	325	AL-14	45	45	Hyd	Hyd	.017	30	.035	7 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Seneca, Pioneer, Phoenix (Engine Option)	8-4 1/2 x 3 1/4	380	AL-14	45	45	Hyd	Hyd	.017	30	.035	7 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Dodge Lancer.....170, 770	6-3 1/2 x 3 1/4	101	AL-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....170, 770 (Engine Option)	6-3 1/2 x 3 1/4	148	AL-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Imperial.....Custom, Crown, Le Baron	8-4 1/2 x 3 1/4	350	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	1/4 P to 1 1/2 P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Plymouth.....Savoy, Belvedere, Fury	6-3 1/2 x 4 1/4	145	AL-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Savoy, Belvedere, Fury	8-3 1/2 x 4 1/4	230	AL-14	45	45	.010H	.018H	.017	30	.035	6B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Savoy, Belvedere, Fury (Engine Option)	8-4 1/2 x 3 1/4	305	AL-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Savoy, Belvedere, Fury (Engine Option)	8-4 1/2 x 3 1/4	325	AL-14	45	45	Hyd	Hyd	.017	30	.035	7 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Savoy, Belvedere, Fury (Engine Option)	8-4 1/2 x 3 1/4	380	AL-14	45	45	Hyd	Hyd	.017	30	.035	7 1/2 B	6 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Valiant.....V-100, V-200	6-3 1/2 x 3 1/4	101	AL-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
FORD MOTOR CO.																	
Comet.....(Engine Option)	6-3 1/2 x 2 1/2	85	Ch-18	45	45	.018H	.018H	.025	37	.034	6B	7	1P to 1 1/2 P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Falcon.....(Engine Option)	6-3 1/2 x 2 1/2	101	Ch-18	45	45	.018H	.018H	.025	37	.034	6B	7	1P to 1 1/2 P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Ford.....Fairlane, Fairlane 500, Galaxie	6-3 1/2 x 3 1/2	135	Ch-18	45	45	.019H	.019H	.025	37	.034	4B	6 1/2	1 1/2 P to 2P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Fairlane, Fairlane 500, Galaxie	8-3 1/2 x 3 1/2	175	Ch-18	45	45	.018H	.018H	.015	27	.034	3B	6 1/2	1 1/2 P to 2P	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Fairlane, Fairlane 500, Galaxie (Engine Option)	8-4 x 3 1/2	220	Ch-18	45	45	Hyd	Hyd	.015	27	.034	3B	6 1/2	1 1/2 N to 1 1/2 P	1/4 P to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
Lincoln Continental.....(Engine Option)	8-4 1/2 x 3 1/2	300	Ch-18	45	45	Hyd	Hyd	.015	27	.034	3B	6 1/2	1 1/2 N to 1 1/2 P	1/4 P to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
Mercury.....Meteor 600, 800; Monterey	6-3 1/2 x 3 1/2	300	2Ch-18	45	45	Hyd	Hyd	.015	27	.034	6B	7	0 to 1 1/2 N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Meteor 600, 800; Monterey	8-3 1/2 x 3 1/2	175	2Ch-18	45	45	.018H	.018H	.015	27	.034	3B	6 1/2	1 1/2 N to 1 1/2 P	1/4 P to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Meteor 600, 800; Monterey (Engine Option)	8-4 x 3 1/2	220	Ch-18	45	45	Hyd	Hyd	.015	27	.034	3B	6 1/2	1 1/2 N to 1 1/2 P	1/4 P to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Meteor 800, Monterey (Engine Option)	8-4 1/2 x 3 1/2	300	Ch-18	45	45	Hyd	Hyd	.015	27	.034	3B	6 1/2	1 1/2 N to 1 1/2 P	1/4 P to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
Thunderbird.....(Engine Option)	8-4 1/2 x 3 1/2	300	Ch-18	45	45	Hyd	Hyd	.015	27	.034	6B	6 1/2	1 1/2 N to 1 1/2 N	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
GENERAL MOTORS CORP.																	
Buick.....Special	8-3 1/2 x 2 1/2	155	AC-14	45	45	Hyd	Hyd	.016	30	.033	7 1/2 B	7 1/2	1 1/2 N to 1 1/2 N	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Le Sabre	8-4 1/2 x 3 1/2	250	AC-14	45	45	Hyd	Hyd	.016	30	.033	12B	9° 52'	1 1/2 N to 1 1/2 N	0 to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Invicta, Electra, Electra 225	8-4 1/2 x 3 1/2	325	AC-14	45	45	Hyd	Hyd	.016	30	.033	12B	9° 52'	1 1/2 N to 1 1/2 N	0 to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Cadillac.....60, 62, 63, 75	8-4 1/2 x 3 1/2	325	AC-14	44	44	Hyd	Hyd	.016	30	.035	5B	6	1 1/2 N to 1 1/2 N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Chevrolet.....Biscayne, Bel Air, Impala	6-3 1/2 x 3 1/2	135	AC-14	31	46	Hyd	Hyd	.019	32	.036	8B	7° 11'	1 1/2 N to 1 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Biscayne Fleetmaster	6-3 1/2 x 3 1/2	135	AC-14	31	46	.009H	.016H	.019	32	.036	5B	7° 11'	1 1/2 N to 1 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Biscayne, Biscayne Fleetmaster, Bel Air, Impala	8-3 1/2 x 3	170	AC-14	46	46	Hyd	Hyd	.019	30	.036	8B	7° 11'	1 1/2 N to 1 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Biscayne, Biscayne Fleetmaster, Bel Air, Impala (Engine Option)	8-4 1/2 x 3 1/2	250	AC-14	46	46	Hyd	Hyd	.019	30	.036	7B	7° 11'	1 1/2 N to 1 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Biscayne, Biscayne Fleetmaster, Bel Air, Impala (Engine Option)	8-4 1/2 x 3 1/2	380	AC-14	46	46	.008H	.018H	.019	30	.036	12B	7° 11'	1 1/2 N to 1 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
Corvair.....500, 700, 900	6-3 1/2 x 2 1/2	80	AC-14	45	45	Hyd	Hyd	.019	33	.035	7B	7	1 1/2 P to 2 1/2 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
Corvette.....F-85	8-3 1/2 x 2 1/2	230	AC-14	46	46	Hyd	Hyd	.019	30	.036	4B	4	1 1/2 P to 2 1/2 P	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Oldsmobile.....F-85	8-3 1/2 x 2 1/2	155	AC-14	45	45	Hyd	Hyd	.016	30	.040	5B	7 1/2	1 1/2 N to 1 1/2 N	0 to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....F-85	8-4 1/2 x 3 1/2	250	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	0 to 1N	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Super 88, 98	8-4 1/2 x 3 1/2	325	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	0 to 1N	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Pontiac.....Catalina, Ventura, Star Chief	8-4 1/2 x 3 1/2	215	AC-14	30	45	Hyd	Hyd	.016	30	.036	6B	4° 50'	1N to 2N	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Bonneville	8-4 1/2 x 3 1/2	235	AC-14	30	45	Hyd	Hyd	.016	30	.036	6B	4° 50'	1N to 2N	1/4 N to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
Tempest.....(Engine Option)	4-4 1/2 x 3 1/2	110	AC-14	30	45	Hyd	Hyd	.016	75	.036	6B	6° 50'	1 1/2 N to 1 1/2 N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
.....(Engine Option)	6-3 1/2 x 2 1/2	155	AC-14	46	46	Hyd	Hyd	.016	30	.032	5B	6° 50'	1 1/2 N to 1 1/2 N	1/4 P to 1 1/2 P	1/4 to 1 1/2	1/4 to 1 1/2	
STUDEBAKER-PACKARD CORP.																	
Studebaker.....Lark-6	6-3 x 4	112	Ch-14	45	45	.024H	.024H	.020	39	.038	2B	6	1/4 N to 1/4 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Lark-8	8-3 1/2 x 3 1/2	160	Ch-14	45	45	.024H	.024H	.016	30	.036	4B	6	1/4 N to 1/4 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Lark Cruiser (Engine Option)	8-3 1/2 x 3 1/2	200	Ch-14	45	45	.024H	.024H	.016	30	.036	4B	6	1/4 N to 1/4 P	0 to 1P	1/4 to 1 1/2	1/4 to 1 1/2	
.....Hawk	8-3 1/2 x 3 1/2	210	Ch-14	45													

"I want the tires
with the Safety Discs."



"Right! . . . Armstrong
Safety Discs . . . see them?"



YOU CAN BUILD A BUSINESS WITH ARMSTRONG SAFETY DISCS

ARMSTRONG DEALERS ARE PROSPEROUS DEALERS

1. Exclusive features customers can see — patented Safety Discs give extra safety at no extra cost.
2. Famous "fist" advertising, most effective in the industry, includes CORONET, LOOK, TRUE, ARGOSY, OUTDOOR LIFE, FIELD & STREAM, SPORTS AFIELD, POPULAR MECHANICS, POPULAR SCIENCE, MECHANIX ILLUSTRATED and on TV.
3. Complete line includes three grades of Safety Disc tires to help you trade up.
4. More room for profit, tire for tire, than any important brand!
5. Longest, strongest guarantee — with road hazard feature, another big extra.
6. No "company store" competition, no direct truck tire sales. Freedom to sell every buyer!

HERE'S WHY. Armstrong's famous Safety Discs are not hidden inside the tire. You can show them to customers. You can demonstrate, in just 10 seconds, how Safety Discs can save their lives.

And you can meet and beat any competition — because there's no extra cost for this extra Armstrong safety.

No wonder Safety Discs have sold millions of tires. No wonder Armstrong is the franchise prosperous dealers are sold on.

Get the Armstrong facts — and grow!

ARMSTRONG RUBBER COMPANY

Home Office, West Haven, Conn.



MERCHANDISING IDEAS FOR SUCCE\$\$FUL SELLING

Here are some money-making ideas which will increase your shop's sales & services

By William M. Montgomery, News Editor



This eye-catching sign is one way to attract prospective customers. When they drop in to ask about the Engine Special the employees sell them on the wisdom of having work done now to prevent costly repair bills later on.

THE readers of **MOTOR AGE** have been instrumental in establishing this money-making monthly feature on tips for successful selling. Letters and cards are being received by the Editors from repairmen, bodyshopmen, service station owners and car dealers. All give helpful and profitable tips on increasing sales and services. If they work for these men in the automotive selling field, why not make these promotional ideas work for YOU?

Smart Slogans Attract Customers

A slogan which is bringing in business is one used by a shop in Los Angeles. It is used in connection with a sign hanging on the building and announces that, "A Cadillac Engine Special is an Investment—NOT An Expense." This is in connection with a Cadillac Engine Special, which has two prices.

The slogan is causing prospective customers to drop in and ask questions. They want to know just how the repairs will be an investment. Why it is not an expense.

Employees are given an excellent chance to explain in detail, changing many prospective customers into actual ones. So successful is the slogan that a like sign is planned for inside the shop. Alan W. Farrant, 1200 Blair Ave., So. Pasadena, Calif.

Mechanics' Wives Spur Sales Promotion Contest

Periodically we put on a promotion that makes even our most laggard mechanic do his level

best to meet a sales-service quota based on the same week or month a year back. While we've tried many incentive plans over the years, some men just didn't seem to respond or work harder to sell the motorist more needed merchandise and service. But the idea we've used for the past two years is the best goad we've ever had. The quota to be met is set up on a team basis. Everyone receives the promised bonus if the quota is met. BUT, we don't pay our mechanics—we pay their wives!

We notify, by letters to the women, that if the quota is made, the wives would win. We found the amount given as prizes

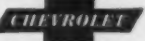
Continued on page 117

WHEN CAR AND TRUCK OWNERS SPEAK THEIR MINDS— nobody listens like Chevrolet!

The Chevrolet Owner Relations Program, first and only one of its kind in the industry, works in many different ways to find out what owners want in the way of products and services. Even at the Auto Shows and General Motors Motoramas, where the latest automotive products are displayed, owners of past and present Chevrolet models—and all other makes, for that matter—are sounded out on their opinions of Chevrolet products and services. By knowing what pleases today's owners most, Chevrolet retains their loyalty and wins new customers for the future.

In this most recent move by the Chevrolet Department of Owner Relations, auto show and Motorama visitors from New York to San Francisco were given questionnaires at a special booth. They were asked to give their frank opinions on Chevrolet and Chevrolet services—and to list features they would like to see on future models. We're happy to say the majority of the opinions were most flattering to Chevrolet and dealers. But the compliments and criticisms alike are important guides toward

strengthening our continued efforts to give customers the kind of products and services they want.

Car owners know what they want and nobody knows it better than Chevrolet. Through these customer-keyed programs, the Chevrolet Department of Owner Relations keeps working to maintain owner product and service preferences of today—and build even greater preferences for tomorrow. . . . Chevrolet Division of General Motors,  Detroit 2, Michigan.

Chevrolet dealers are No. 1 with customers because customers are No. 1 with Chevrolet dealers





New Products Shopping Center

Air-Operated End Lift

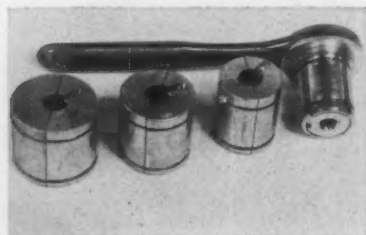
Features a Hycar Cup of neoprene

Sav-T-Engineering Company: An Improved Sav-T-Jack Air-Operated End Lift, featuring a Hycar Cup manufactured of neoprene, is now available. Tripling the life of the O'Ring the new hycar is $\frac{1}{4}$ " thick, $6\frac{1}{2}$ " across and is supported by two circular steel plates. The Sav-T-Jack is a two stage lift: 1st Stage 43" and 2nd Stage 62" with height adapter. The Sav-T-Jack lifts all cars and flatbed trucks up to 5000 lbs., company claims. Write: Sav-T-Engineering Co., 316 East Beach Ave., Inglewood, California.

Muffler Expander Tool

Used to expand or re-condition tail pipes and muffler necks

E. Z. Way, Incorporated: A new muffler expander tool is introduced for fitting new exhaust and tail pipes to old mufflers. E. Z. is



designed to save time and materials, company states. To expand

or re-condition tail pipes and muffler necks, simply insert expander and tighten screw. The fastest and easiest method to obtain results is to use an impact tool, claims firm. The new E. Z. Way Expander has an especially designed handle for rigid control of the unit when pressure is applied, to prevent loosening or twisting off of muffler necks. Write: E. Z. Way, Inc., 2606 High St., Logansport, Indiana, or 'phone 5543.

Air Impactool

Has speed, power for tightening and removing nuts



Ingersoll-Rand Company: A new high-speed air-operated impactool is introduced. The size 410 Impactool tightens or breaks loose nuts quickly and easily with 900 to 1000 impacts a minute when operated at 90 or 120 p.s.i. respectively, company states. Fast run down is assured by free speeds of 4150 r.p.m. at 90 p.s.i. and 4500 r.p.m. at 120 p.s.i. The compact tool which has a side to center distance of $1\frac{3}{16}$ " meas-

ured to the shoulder of the square driver, is used on nuts in inaccessible locations. Write: Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

Fuel Pump Pressure Control

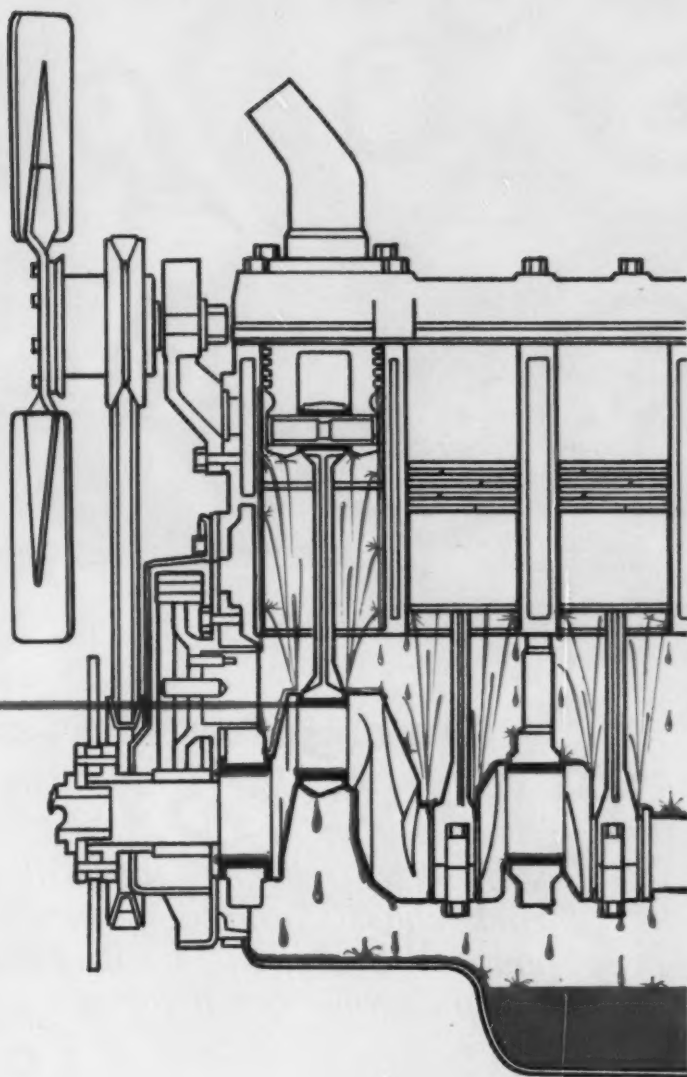
Unit can be installed directly to carburetor or fuel filter



Service Tool and Equipment Company: The new Presco No. 1 recently marketed, it is claimed, removes air, vapor and excess pressure from the gasoline fuel line and returns it directly back to the gasoline tank, and fits all cars and trucks. The Presco No. 1 kit contains a special self-threading fitting for installation at the gasoline tank, and an adjustable control for installation ahead of the carburetor, complete with heavy lead-in hose and clamps. Copper tubing used is supplied by dealer. The same control, with hose and adapters furnished for pressure return to the tank side of the fuel pump, is

Continued on page 92

Why precision bearings are vital here



Engine bearings have *two* vital jobs. They provide a low-friction surface for journals to ride on. But equally important, they control the oil throw-off, due to the spinning action of the shaft, that lubricates and cools cylinder walls and other engine parts.

Exact tolerances are needed in engine bearings and shaft diameters to get the kind of precise "clearances" needed to control oil throw-off. *Too little clearance*—an error of less than .001"—may result in an overheated bearing and early bearing failure due to insufficient lubrication.

Too much oil clearance is equally harmful to proper engine performance. If oil clearance is changed from

just .0015" to .006", the oil throw-off (shown above) increases 25 times. And even the best piston rings can control only about a 5 times normal amount of oil. The excess oil then slips past piston rings into the combustion chamber where it clogs piston rings and builds up combustion chamber deposits.

Federal-Mogul knows, as you probably do, the importance of oil clearances. That's why **Fm** bearings are manufactured to tolerances as close as $\pm .000125"$ —1/16 the thickness of a human hair. Why take a chance on anything less than precision engine bearings? You can be sure of a satisfied customer when you use the best. See your Federal-Mogul jobber.



FEDERAL-MOGUL ENGINE BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN



Dodge's house on wheels combines the thrill of outdoor living with house trailer luxury.

Dodge's Motor Home

New motorized home is built on a Dodge P-300 truck chassis and is powered by a 200 horsepower V-8 engine. Unit is available in 3 lengths and puts your campsite on wheels

THE thrill of camping outdoors, the luxury of a house trailer and the excitement of travel now can be combined into one with Dodge's all-new Motor Home.

The Motor Home is one of the latest innovations in the camping-traveling field.

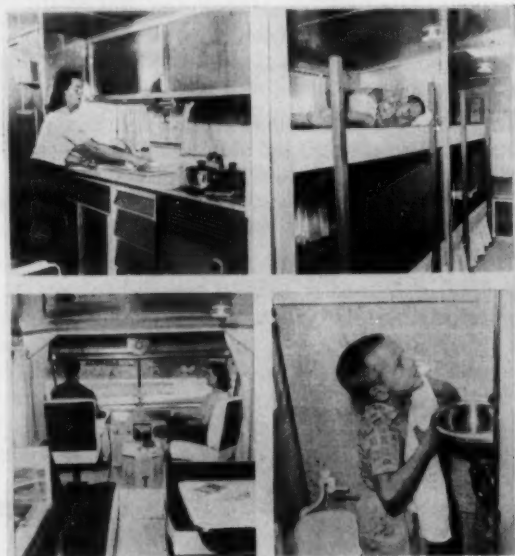
The motorized home is designed and built by Frank Motor Homes, Inc., Brown City, Mich., on a Dodge P-300 truck chassis. It's powered by a 200-horsepower V-8 engine with a three-speed automatic pushbutton transmission.

The unit is available in three lengths—20, 23 and 26 feet. It has an interior ceiling height of six feet, three inches and an exterior height of eight feet, seven inches. It is seven-and-one-half feet wide.

Each unit is a complete home on wheels. All living facilities are provided.

Continued on page 125

All of the conveniences of home living are provided in this uniquely compact and comfortable unit.



HERE'S WHAT'S IN IT FOR YOU!

**WESTERN
UNION**

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SYMBOLS

DL=Day Letter
NL=Night Letter
LT=Letter Telegram
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SPECIAL BULLETIN

14 NEW ZIP-FIT CARBURETORS JUST ADDED TO THE CARTER LINE.
THEY EXTEND COVERAGE OF THE CAR MARKET BY 14,700,000 MORE
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COMPLETE NEW CARBURETOR LINE IN THE INDUSTRY =
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SELL MORE — SERVE BETTER — WITH CARTER
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DIVISION OF **ACF** INDUSTRIES, INC.

READER'S

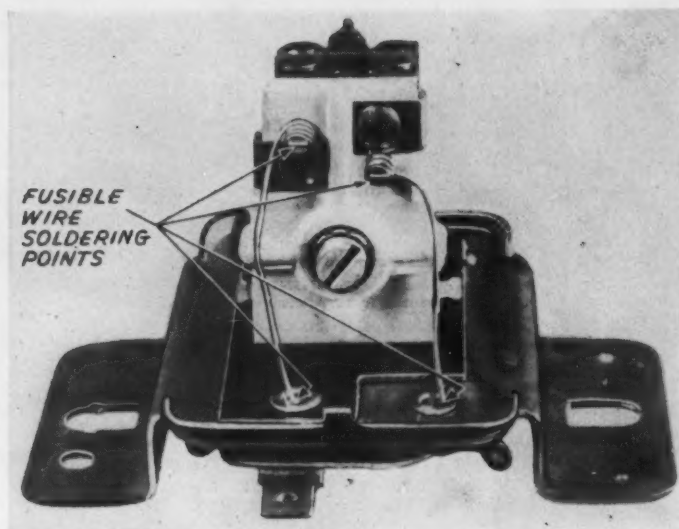
CLEARING

HOUSE

MOTOR AGE CLINIC

for troubleshooting

BY JACK MONTGOMERY, TECHNICAL EDITOR



Replacing Fusible Wire In Alternator Regulator

On late production 1960 Valiant and 1961 Plymouth, DeSoto and Valiant cars the alternators incorporated an internal fuse. This fuse consists of two replaceable fusible wires which provide better protection against possible corrosion than the "in-line" fuse.

Should it be necessary to replace either of the fuse wires, the following procedure is recommended: Locate and correct the condition which caused the fuse wire to melt. Then, cut off the blown fuse wire above the soldered connection at the rivet on the regular base. Unwind the remaining fuse wire at the contact bracket.

CAUTION: Do not attempt to unsolder the blown fuse wire at the rivet as damage to the very fine voltage coil wire may result. A wire package is available

which contains 24 inches of fusible wire.

After allowing the soldered connection time to sufficiently cool, pull the wire up and wrap it around the contact bracket. Solder the coiled wire to the bracket and cut off the surplus wire.

NOTE: It is important to solder the fuse wire to the contact bracket to ensure a good electrical connection.

1957 Buick Accelerates Sluggishly

I have a problem with a 1957 Buick Roadmaster. My customer said he left the car to be lubricated at a service station and when he picked up the car it didn't seem to run right. It acted like the engine was struggling to get the car under way. It acts like something is binding in the

automatic transmission. Have you encountered any similar problem like this?

*Bill's Auto Service
Indianapolis, Ind.*

I HAVE seen similar cases where the sprags went bad in the turbine stators. This will prevent the car from accelerating properly. Replacing the sprags will most likely take care of your problem.

Chevrolet Engine Knocks When First Started

I would like your opinion on a condition that is prevalent on or in the 1959-60 283 cubic inch Chevrolet motor. That is the inserts (rod) knocks when the motor is first started. This occurs after the motor has warmed up good and then is left for some length of time. When the motor is first started the bearings will rap momentarily until the oil hits the bearing. Several attempts have been made in our shop to correct this but to my knowledge none have been successful. New inserts and oil pumps have been installed, but this does not help. These motors that have this condition have not gone bad as yet, but I can't help but think that this is not a normal condition and harm will appear sooner or later. Have you had any inquiries on this type of condition? Have you had any solution offered?

*Daniel W. Greek
Cone Bros. Chevrolet
Anaheim, California.*

USUALLY when you have a condition such as you describe it is due to the oil pump losing its prime or excessive bearing clearance. I would suggest using an oil leak detector filled with SAE 30 oil with pressure valve set at 25 lbs. Turn engine over slowly by hand noting the leakage at each bearing. Normal leakage should be 20 to 150 drops per minute.

Wheel Cylinder Cups Hold Needle Bearings in Place

Here's how I keep the needles in place in the gear cluster when assembling the transmission. I use two wheel cylinder cups just the size to fit the hole that the counter shaft goes into, putting the taper the way I wish to push the shaft. This allows the cups to be pushed out easily, leaving the needles in place.

*J. J. Badgeley
Long Island, N.Y.*

Applying Air Pressure Removes Carbon Contact In Distributor Cap

This is for the mechanic, who has tested the spring tension on carbon contact in the distributor cap, only to find it stuck in such a way, that it could not be pulled back down. As a solution, try a blast of air; it will pop right out. There is no replacing of cap, or no prying.

*M. Jeffrey
Broomall, Penna.*

Lean Carburetor Mixture Causes Spark Plug Misfiring

IF complaints are registered about misfiring when engine is accelerated from low to high speed, check the carburetor before blaming the trouble on the spark plugs. A lean fuel mixture may cause plugs to misfire. The reason is because voltage requirements are highest at this time and the mixture requires more voltage to the spark plug gaps.

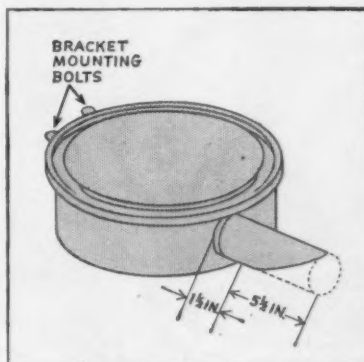
Repairing Stripped Threads in Carburetor

I have discovered a method for repairing a four barrel carburetor, where the holddown bolt strips the threads in the carburetor. Instead of changing the complete bowl on the carburetor, make a new thread with a $\frac{5}{16}$ " tap in the top part of the hole, then install a battery hold down bolt, which fits perfectly. Cut new bolt to required length, and thread top of the bolt to fit nut which holds down the air filter.

*Moe Mitzman
Jamaica, L.I., N.Y.*

How To Increase M.P.G. on Pontiac Tempests

We have had several complaints about poor gas mileage on



the Pontiac Tempest. After thorough checking we found that the air cleaner horn opening is too small to supply enough air to the carburetor at normal driving speeds; resulting in low combustion efficiency on our motor analyzer. After experimenting with different angles of cuts on the air cleaner horn, we were able to bring the rating up on all the engines from 65 to 89 per cent; resulting in a good increase in mileage for our customers.

*Harry E. Weber, Sr.
22 Houston St.
Charleston Heights, S.C.*

Rocker Arms Are Starving For Oil

We have been having some Comets and Falcons that have noisy rocker arms; they don't seem to be getting enough oil. How can we go about curing this condition?

*Modern Motors,
Philadelphia, Pa.*

OIL is fed to the rocker arms through the rear rocker arm support bolt. A quick check can be made by loosening this bolt one turn. Start the engine. If oil is now available, turn off the engine and remove the rocker arm bolt. Take this bolt and grind a flat to the root diameter of the bolt thread extending from the chamfered portion of the shank to a point $2\frac{7}{16}$ inches from the base of the bolt head. Grind a matching flat on the opposite of the bolt.

Dental Mirror Used To Check Valve Keepers

On some six and eight model inline engines the valve chambers are inaccessible through the elimination of a removable fender shield. Therefore, when grinding valves on these cars, it is almost impossible to see if the keepers are all in place upon completion. We use a small dental mirror for this. It has a 8 in. hand and a mirror head approximately one in. diameter. This enables us to work over the fender and still see that the keepers are in place.

*Bill Ainsworth
Vernon, Texas*

Clothes Pins Record Firing Order When Removing Dist. Cap

Installing IGN Points on all V' Chevys is a hard job because the distributor wires are too short to remove the cap. I have an idea that works well for me. I take 4 clothes pins and number them 1, 2, 3, 4, then take the
Continued on page 113

New Products Continued from page 86

marketed under company stock Presco #5, and Presco #10. Write: Service Tool & Equipment Co., 805 East Excelsior, Hopkins, Minnesota.

Engine Analyzer

Records results on tape for visual comparison

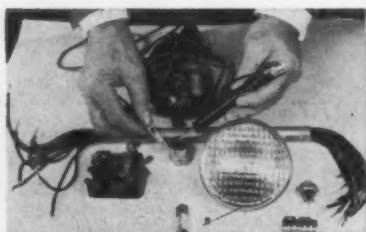
Lektrograph Manufacturing Corporation: Lektrograph, an electronic analyzer has been de-



veloped to analyze the conditions of an automobile engine. By using the heart of the engine, the intake manifold, it operates in much the same manner that the electrocardiograph indicates the condition of a person's heart, company states. The malfunctions of the mechanical, ignition, electrical or carburetion can be detected with ease. Write: Lektrograph Manufacturing Corp., 5930 Don Way, Carmichael, California, or 'phone Ivanhoe 7-5724.

Electrical Circuit Tester

Locates trouble in car wiring



Burnworth Tester Company: This electrical circuit tester comes complete with 2 batteries and 4 foot electric cord. It is said

to check the continuity of a circuit quickly and also it can be used by mechanics to locate troubles in car wiring. It can also be used to set distributor points, test fuses and locate grounded wires. Company states that switches of all types may be tested quickly. Write: Burnworth Tester Company, 815 Pomona Ave., El Cerrito, California.

Installation Tool

Puts rear wheel oil seals in their place

Federal-Mogul Service: An installation tool has been designed for rear wheel oil seals. This new rear-wheel seal installation tool is made of metal to withstand heavy duty. It features twelve



plastic adapters—all the necessary sizes for servicing popular model cars and light trucks. While the tool is meant to be a service device, it can also be used to convince customers of the need for seal replacements. Comparing the fit of a used seal and a new one, on the appropriate plastic adapter, shows the reason why old seals are ineffective, company states. Write: Federal-Mogul Service, 11031 Shoemaker Ave., Detroit 13, Michigan.

Electric Drill

Can operate in close quarters
Disston Division, H. K. Porter

Company: A new 1/4" inch electric drill has been introduced. The new drill, known as the "Dirk," has been designed principally to give the operator better control of the tool; to make it possible to work in closer quar-



ters; and to reduce operator fatigue, company states. The motor is at a right angle to the drilling axis. Power from the 3 ampere motor is transmitted by patented Spiroid gearing. The hand grip of the Dirk is large enough for the operator to hold it with all four fingers and thumb. The trigger switch is controlled by the index finger. Write: Disston Division, H. K. Porter Co., Inc., 74 Foley St., Somerville 43, Mass.

Brake Shoe Return Springs

Three assortments are available

The Parts and Accessories Division of Wagner Electric Corporation: Announced are new assortments of brake shoe return



springs. Three assortments are available. The basic assortment, Wagner Lockheed part number FL-550, includes springs for the most popular model of cars. A supplemental assortment, FL-560, covers additional car applications, and assortment FL-570 includes springs for truck

Continued on page 95

**I SAID A '59 BUICK
EXHAUST PIPE! THIS
ONE WILL TAKE ME
A HALF HOUR TO FIT!**

BILL'S READY TO
WRAP THAT EXHAUST
PIPE AROUND THE
KID'S NECK. HE
WANTED A BUICK
PART. THAT ONE
BENDS IN THE
WRONG PLACE.

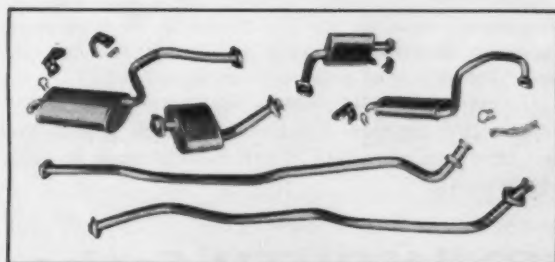
IT'S SUPPOSED
TO FIT BUICKS,
TOO.



BUICK PARTS ARE BEST FOR BUICKS—BEST FOR YOU!

Why take a chance on burning up your time (and temper) with parts that may not fit? Buick Factory Engineered Parts fit Buicks to perfection. They should. They're designed by the same people who made the car—to the same specs. You can bet they fit right, work right. And, here's another advantage. Letting your customers know you use Buick Parts keeps 'em coming back—brings you new Buick business, too. What's more, a *complete* inventory is as close as your local Buick Dealer.

**YOUR ONE-STOP SOURCE FOR BUICK PARTS IS
YOUR AUTHORIZED QUALITY BUICK DEALER**

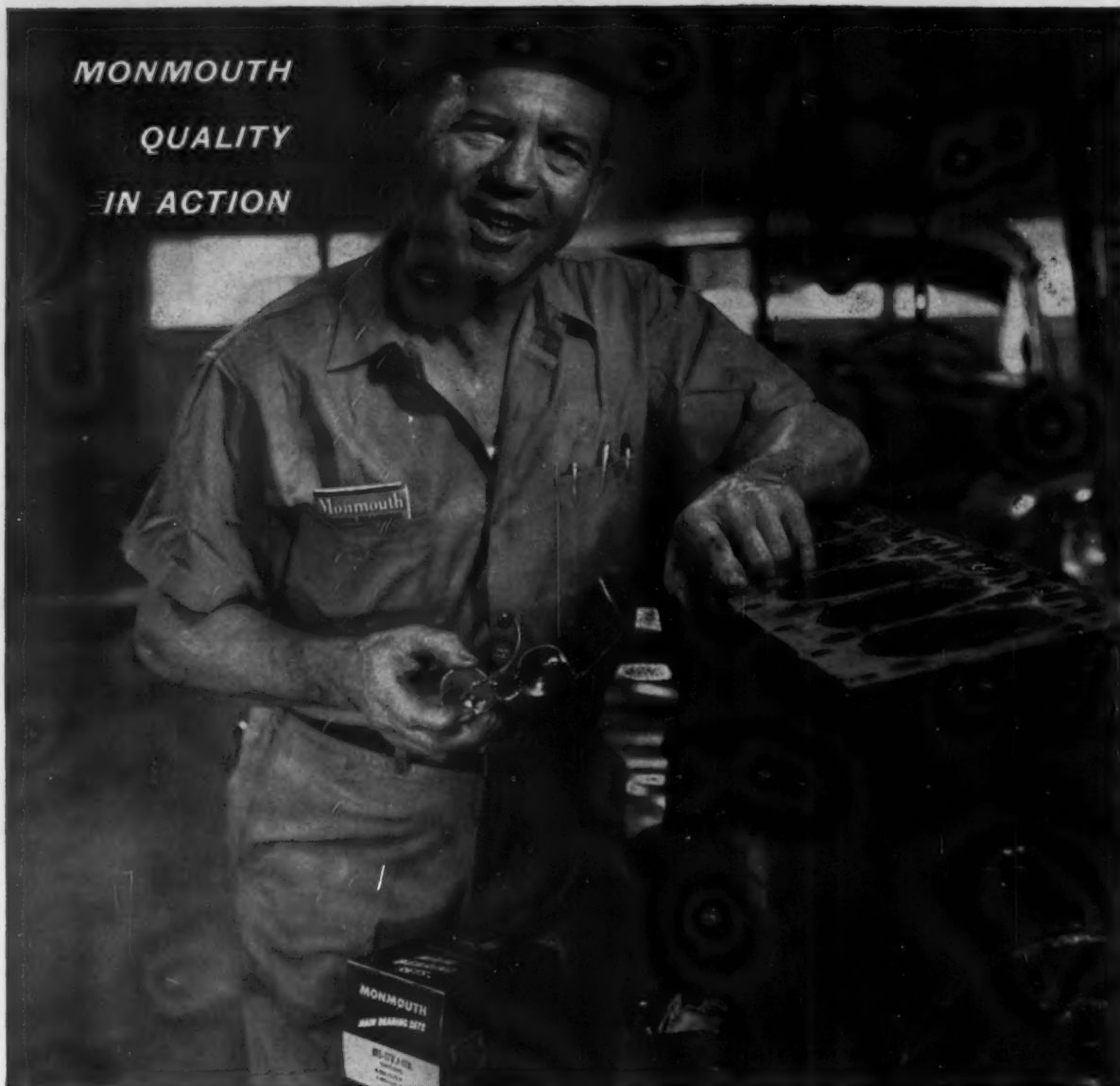


BUICK exhaust and tail pipes are formed to fit without bending or adapting...cuts installation time.

BUICK mufflers have heavy rust-and-corrosion-resistant coatings... precision connections for quick, easy fit.

BUICK resonators are acoustically tuned to BUICK exhaust systems for least sound with least back pressure.

**MONMOUTH
QUALITY
IN ACTION**



"I've used Monmouth Bearings for 15 years..."

... and you can benefit from my experience. I've seen a lot of changes in cars since I repaired my first Model T. Today's engines need high quality bearings, designed especially for modern driving. Believe me, you won't find a better line of bearings than Monmouth."

If you want performance that pays off, use Monmouth bearings in all your engine rebuilds. For instant service, call on your NAPA jobber. He can give you complete Monmouth service on all your engine bearing requirements.

reports J. P. Lamb
Lamb's Garage
Meridian, Mississippi

MONMOUTH Engine Bearings

CLEVITE SERVICE: Cleveland Graphite Bronze • Division of Clevite Corporation • Cleveland 3, Ohio



New Products Continued from page 92

brakes. Application listings are furnished with each assortment, so that correct springs can be selected immediately. Each assortment contains 96 springs—24 axle sets of 4 per axle. Write: *Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.*

Droplight Reel

Electric cord reel retracts automatically



Cordomatic Corporation: The Droplight Reel eliminates dangerously kinked and knotted electric cords. When not in use, the cord automatically retracts into its reel housing. The locking mechanism has a fool-proof gravity stop action, which locks and releases with finger-tip control at any length up to 30'; heavy-duty spring motor is dust-proof and life-time lubricated. Write: *Cordomatic Corp., 17th and Indiana Ave., Phila., 32, Pa.*

Oil Filter

Designed for easy changing



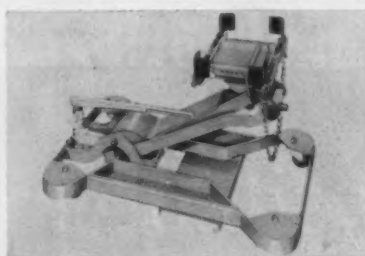
Fram Corporation: Just released is a new "Wear-Guard," Easy-Change type oil filter for replacement installation on all 1961

General Motors passenger cars. Called the PH-10, this filter fits all 1961 Buicks and Oldsmobiles, company states. A hex nut has been added to the standard Easy-Change type filter to facilitate removal and change, since the factory filter installation does not allow room for removal by hand, as with other filters. The hex nut provides for quick wrench removal. Write: *Fram Corp., Providence 16, R.I.*

Transmission Jack

Permits servicing from the floor

Blackhawk Automotive Division: According to the company all automobile and light truck automatic and conventional transmissions are easily handled and



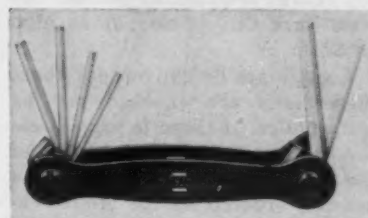
positioned by one man working from underneath with the new T-1 transmission jack introduced recently. Featuring a high lift of 29 inches, the T-1 can be used as a workstand if desired. The unit has a minimum low height of 6 inches, capacity of 1000 lbs., overall length of 32½ inches and a width of 21¾ inches at its widest point. Four large swivel casters are spaced for maximum stability and permit smooth rolling of the jack to the job. Trays on either side hold tools and small parts. Write: *Blackhawk Automotive Division, 5325 W. Rogers St., Milwaukee 46, Wis., or 'phone Orchard 1-4000.*

Metric Hex Key Pack

For use on foreign equipment

K-D Tool Company: A tool for

work on foreign cars or engines where socket screws are used is the new Metric Hex Key Pack. The pack, numbered K-D 45, contains six sizes for work on for-



eign equipment. They are 2mm, 2½mm, 3mm, 4mm, 5mm and 6mm. All six keys are mounted in a pocket case, three and seven-eighths-inches long folded. The case is assembled with bolts so that the keys may be easily replaced. Other metric key sizes are also available, company states. Write: *K-D Mfg. Co., 526 N. Plum St., Lancaster, Pa., or 'phone Express 7-8176.*

Fuel Pressure Regulators

Adjustable to fit all U.S. cars and trucks

Precision Automotive Components Co., Manchester, Mo.: Flow-trol-r fuel pressure regulators packaged in a see-through bubble on individual cards are



now being offered. The Pacco Flow-trol-r, which is adjustable to fit all U.S. cars and trucks, and most foreign makes, saves gasoline and engine wear, as well as preventing engine trouble, company states. Individual Flow-trol-r cards are displayed in groups of six on an attractive 17½" × 14½" poster board for counter or wall use. Application

Continued on page 104

Vehicle Inspection Continued from page 45

inspection fee. In most areas the top charge is \$1.50. In Buffalo and New York City it may go as high as \$2.00.

Complaints by car owners about inspections are checked out by state police. If there is some basis for the complaint, the operator of the station is called to task at a hearing ordered by the Motor Vehicle Commissioners. Malpractice means a suspension or revocation of the inspection license.

Pa. Law First In Nation

Harrisburg, Pa.—Pennsylvania was the first state in the nation to enact a compulsory motor vehicle inspection law. This took place in 1929.

However, it was a voluntary inspection program conducted the preceding year via gubernatorial proclamation that prompted writing of the idea into law.

This experimental campaign produced astonishing results. Of the 750,000 vehicles inspected, 58 per cent required some kind of adjustment to meet the minimum requirement of the day.

The poor condition of the mechanical and safety devices of vehicles on the highways sparked the interest of a large segment of the public, including the press, motorist groups and civic organizations. The legislature responded by promptly and enthusiastically enacting in 1929 a law making it mandatory for motor vehicles to be inspected upon proclamation by the Governor.

A single inspection during a year was soon discovered to be insufficient and the law was amended to require semi-annual inspections.

Present law demands that owners of passenger cars submit their vehicles for inspection during both the May-July and November-January periods. Commercial vehicles must comply during the February-April and August-October campaigns.

There are more than 12,000 official state inspection stations in Pennsylvania. These are privately-operated service stations and garages duly authorized to perform the service by the Secretary of

Revenue following a state police investigation.

Administration of the program is self-supporting via a 10 cent charge per sticker levied against the inspection station. While no charge is prescribed by law, the average inspection fee is \$1.50 to \$2.00.

During the actual inspection of automobiles, mechanics must check legal registration; safety glass; sheet metal; bumpers, fenders and frame; horn; rear view mirror; windshield wipers and steering mechanism; brakes (including pulling of a wheel); front end and



steering; exhaust system; tires and lights and safety devices.

Failure of the inspection station to comply with the provisions of the law may result in the immediate suspension of the inspection privilege.

New Jersey Is Model State

Trenton, N.J.—The current problem in New Jersey's pioneering vehicle inspection system is a continually rising percentage of rejections since the state cut back from two inspections a year to one.

When the two-a-year system ended in 1955—because of overcrowded facilities—almost 70 per cent of the vehicles were being approved on first try. Last year, only 55 per cent got stickers without re-inspection.

But motor vehicles officials say these figures are just another proof of the worth of inspections. Since they show that fewer inspections make drivers less particular about mechanical safety, they show too that no inspections would be worse. When the program started in 1938, three out of every five cars flunked.

Inspection is New Jersey's most expensive safety program, at \$4 million a year. But when its value was challenged by legislators last year, Acting Motor Vehicles Director Ned J. Parsekian answered with a document in defense that presumably will protect the program from economy-hunters for some time.

New Jersey is considered the model state for traffic safety. It won the National Safety Council's first "Green Cross" award last year. Yet only two governments have adopted the Garden State's system of state-owned inspection stations—Delaware and the District of Columbia.

Twelve states require inspections at licensed private garages. Nine others have limited inspection programs.

Parsekian showed the lawmakers that the three government inspection systems had a 1958 highway death rate per 100 million miles of 3.4, compared with 6.7 for no-inspection states and 5 for the others.

Jersey inspections are carried out by more than 500 examiners at 39 stations—six of them set up economically at drive-in theaters.

Fourteen items are checked. The actual inspection takes only five minutes, but hours-long waiting lines sometimes develop at popular locations. This, and annoying exhaust fumes at older stations, are the only beefs from the public.

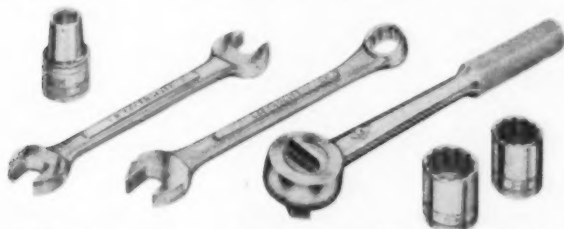
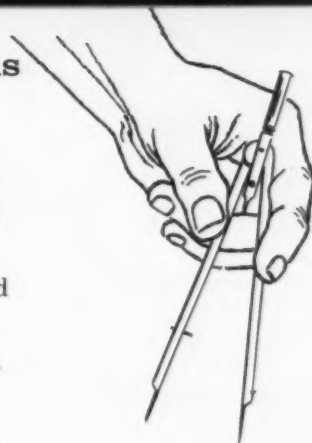
Defects in brakes (17 per cent) steering (12 per cent) and rear lights (10 per cent) were the major causes for rejections last year. Pushing up to 350 vehicles through each lane each day, the state handled more than 4.1 million vehicles in 1960 (including re-inspections). More than 236,000 drivers had to go through three times or more to win approval.

After annual registration, a pas-

Continued on page 106

Precision tools are the extensions
of a professional man's fingers

There's only one way to tell if a tool is *right* for you—by actually handling it. As an experienced mechanic, your own hands will confirm what your eyes have told you. Yes, the highly polished finish of S-K/Lectrolite Tools is *more* than matched by their remarkable fist-fitting comfort, their perfect weight and balance. Next time you visit your jobber, shake hands with quality. Try the heft and feel of S-K/Lectrolite wrenches.



S-K/Lectrolite . . . America's quality line of tools. First choice of professional mechanics for over 35 years.

See reverse side for illustrations of a few S-K/Lectrolite sets.

That extra quality
you can
actually feel



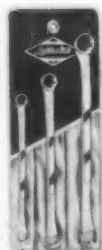
*Adjustables...ratchets...sockets...open
end wrenches...pliers...pipe wrenches...
speeders...extensions...combination wrenches...
box end wrenches...flex sockets...deep sockets...
universal joints...flex handles...spark plug sockets...adapters...tire tools*



Set No. 4189

S-K/Lectrolite has 'em all

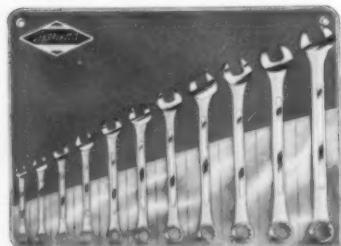
**...and S-K/Lectrolite quality
actually costs no more!**



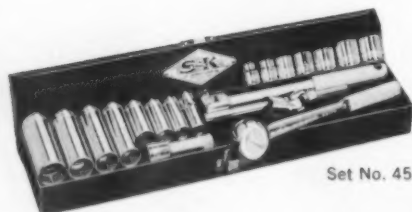
New! Set No. 330-RH



New! Set No. 4921



Set No. 1711 R



Set No. 4520



**Highly polished heads and surfaces—by
far the most comfortable tools made**



**All openings are precision machined...truly
the work of specialists for use by specialists**



**Every S-K/Lectrolite tool is guaranteed
against defects in material or workmanship**



Unequalled for long life and durability

If you make your living with tools, you'll be particularly
pleased with the built-in quality of S-K/Lectrolite tools.
In fact, the very first time you use them, you'll discover why
they are preferred by professional mechanics everywhere.



Designers and manufacturers of quality wrenches since 1923

SERVICE MANAGERS' NOTEBOOK



A round-up of service tips on automatic transmissions that will mean more money for YOU!

Quick test on welded type converters

The one-way clutch in the converter of the Falcon as an example, can be checked quickly and accurately. Only a dependable torque wrench and an inexpensive holding tool are required. Using a clean work bench, place the converter with the hub facing up upon it. Install the stator outer race holding tool in any one of the holes provided in the stator for this purpose.

Insert the checking tool into the converter drive hub. Make sure that the spline on the tool engages the spline on the stator clutch inner race. Next, place a dependable torque wrench on the tool as shown in our illustration. Hold the assembly firmly with the left hand and use the right hand to operate the torque wrench. Use a clean shop towel to protect your hands from cuts while holding the converter.

Check to make sure the stator inner race can turn freely in a clockwise direction when viewed from the pump side of the converter. This can be determined

by slowly rotating the torque wrench in this direction.

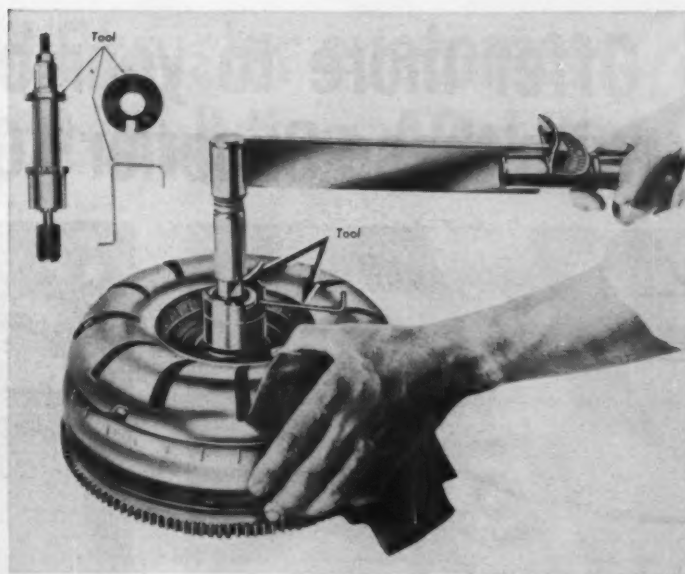
If the clutch passes this test, slowly rotate the torque wrench in the opposite direction. When turning torque wrench in the counter-clockwise direction, the clutch should lock-up and hold a ten (10) ft. pound pull. This lock-up test should be applied to at least five (5) different locations around the converter. This is done to make sure the one-way clutch will hold in all positions properly. If the one-way clutch passes this test with the use of a torque wrench, the unit is in good condition and fit for further service. Should the unit fail the

test, replacement is the only possible cure.

Hydra-Matic gear noise

Improper reassembly of rear unit gear set has been the cause for some gear noise in an overhauled transmission. Care should be exercised when installing the rear unit sun gear and internal gear. The sun gear must be installed with the drilled spot on gear face pointing towards the rear of the transmission. The internal gear of the rear unit has a 15 degree chamfer on the drive lugs. The chamfer faces the

Continued on page 116

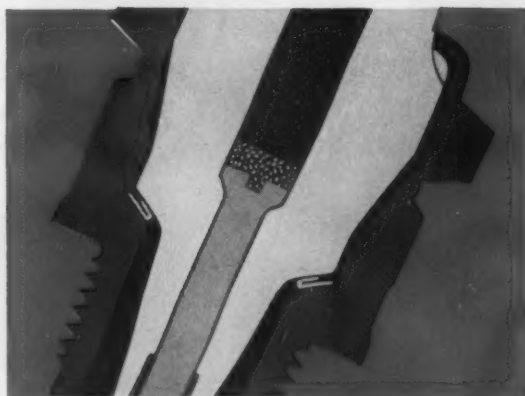


Torque wrench and special tool being used to check the one-way clutch in welding type converter. (Photo courtesy of P. A. Sturtevant Company of Addison, Illinois.)



Win new customers and
FIRE-RING
for ALL FORD AND

**Offer more to your customers
with these Superior AC Features**



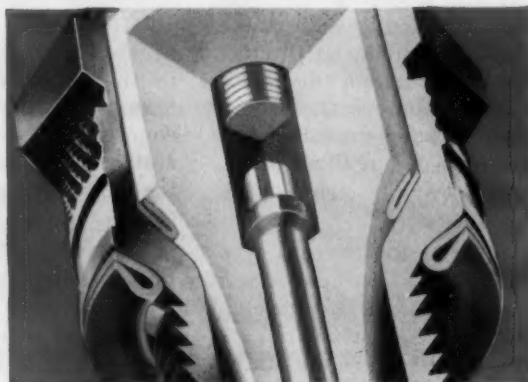
Superior resistor design imbeds the resistor in a copper-glass seal for positive protection against moisture and gas leakage.



Superior extended shell design protects the insulator tip and center electrode for easier starting and longer electrode life.



Superior Hot Tip design heats fast to burn away fouling deposits as they form to provide exclusive self-cleaning action.



Superior sealing design offers copper-glass internal seal and pressure-formed external seals for sure prevention against overheating.

new profits by recommending...

SPARK PLUGS CHRYSLER CARS!

Cover Ford and Chrysler customers with the Profit-Building AC Line

There's an AC Fire-Ring Spark Plug engineered for all Ford Motor Company and Chrysler Corporation cars. For example, just four types—in regular, regular tapered seat, and extended shell tapered seat designs—cover all Ford, Mercury, Edsel, Thunderbird, Lincoln and Continental cars. Just twelve types—in regular, resistor and extended shell designs—cover all Plymouth, Dodge, De Soto, Chrysler and Imperial cars. Call your AC wholesaler today and start winning new spark plug customers and greater spark plug profits.



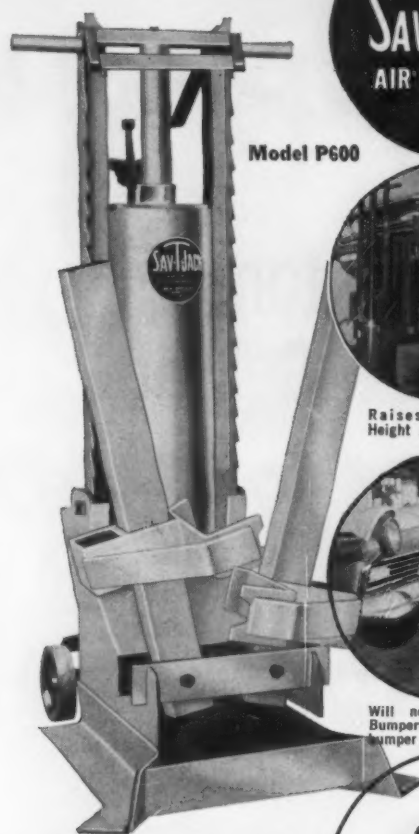
Recommend



**FIRE-RING
SPARK PLUGS**

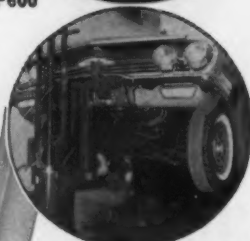
They're Best for All Cars!

GIVE YOUR SERVICE PROFITS the BIG LIFT



Model P600

SAV-T-JACK
AIR OPERATED



Raises to 62" with Height Adapter



Will not Damage Soft Bumpers. Picks up by bumper brackets.



Never Becomes Obsolete. Inexpensive adapters available.

**ONLY TWO
STAGE LIFT**

1st Stage - **43"**

2nd Stage - **62"**

**LIFTS ALL CARS
& FLATBED TRUCKS**

NEW, SAV-T-STANDS

Three Sizes with
"Adjustable Spring Loaded
Scissor Lock"

- *Eliminates all problem of finding hole.
- *Solid Metal Plate—does not pit asphalt.
- *Precision fit—closer tolerance to height of car.



Write for complete information:

SAV-T-ENGINEERING CO. • 316 E. Beach Ave., Inglewood, Calif.

Chilton Manuals Page

By Paul A. Murphy

Continued from page 66

clearance. While the effects of this factor increases with increased engine speed, it has the same effect as a worn camshaft.

For this reason, it is much more important that the service man maintain factory recommended valve clearances. It is just possible that with excessive valve clearance the engine will run into valve damage even though the engine is never operated at excessive rpm.

The old saying that if you can hear the valves you have no worries just isn't true. On modern engines with valve overlap, correct valve settings are a must.

Battery Care

Here are a few tips that extend battery life. Disconnect cables from the positive and negative terminals, brush away all loose dirt from top of battery and around the terminals with a wire brush. Mix a solution of ¼ lb. baking soda in a quart of water. Apply mixture with a paint brush to terminals, top of battery case, and metal ground strap. This treatment will emulsify the oil and grease and neutralize the corrosive acids. Rinse off the soda solution with clear water and wipe or blow dry. Clean the inside of the cable clamps, spread them slightly, install securely on battery post. Apply a light coat of vaseline or other grease to the top of the terminals to protect them from future corrosion. Do not let insulating type grease get between cable clamp and battery post. High voltage loss can be directly related to battery terminal condition.

Air-Conditioned Vehicle In Paint Ovens

When a vehicle equipped with an air-conditioning unit is exposed to heat lamps or placed in a paint oven, the 12 volt feed wire to the air-conditioning compressor clutch should be disconnected. After the vehicle is removed from the source of heat, the engine should be operated for a few minutes to permit the fan to stabilize the temperature of the condenser and refrigerant lines. The compressor clutch feed wire may then be connected and the air-conditioning system operated. If this precaution is not adhered to, the high pressure from the extreme heat condition could damage the compressor seal and/or refrigerant lines when the engine is started.

TALK



NEW YORK
"I've installed hundreds of Airtex fuel pumps. I'm sold on 'em."



HOUSTON
"I'd buy Airtex even if I didn't get a premium."



DENVER
"The Skil Drill is a real bargain. Best of all, it was free from Airtex."



PORTLAND
"Until I bought a DO assortment, I didn't realize how much profit there is in fuel pump service."



MIAMI
"When they say Airtex Fuel Pumps are built to last, they mean it. I know from satisfied customers."



BALTIMORE
"The DO is the greatest Fuel Pump program in the history of the industry."



CHICAGO
"I'm on my third Airtex assortment now . . . and I've received all three dividends, too."



ATLANTA
"My wife is really enjoying the Corning Ware Set. Now she wants a radio."



LOS ANGELES
"Airtex . . . a top-quality Pump, good profits and now DO Dividends."



AKRON
"This Airtex DO program is a honey—no certificates to collect—no jingles to write—I just install quality Airtex and get a gift besides."

TALK

THEY'RE ALL TALKING ABOUT AIRTEX... HERE'S WHY!

These Airtex Dividends—sparkling . . . high-quality . . . honest values plus the finest fuel pumps made. To get yours, order the Airtex **DO** PAKage of eight fast-moving Fuel Pumps—a normal 8-week supply and you'll receive your choice of these handsome Dividends. Choose the Corning Ware Royal Family Set . . . the Powerful Transistor Radio . . . or the Skil industrial-rated Power Drill. You pay the lowest price

for 7 Fuel Pumps and a special promotional price for the extra Pump plus Dividend. Sell the extra Pump and the Dividend is yours free.

Exclusive features are built into every Airtex Fuel Pump to give your customers long-lasting performance. Ask your Airtex jobber for details on the Airtex DO today!



FOR BEST PERFORMANCE/BEST VALUE/
INSTALL A NEW FUEL PUMP/INSTALL

AIRTEX

AIRTEX AUTOMOTIVE DIVISION
FUEL PUMPS • WATER PUMPS
AIRTEX PRODUCTS FAIRFIELD, ILLINOIS

New Products Continued from page 95

sheets for the mechanics' quick reference are attached to each counter display. Write: *Precision Automotive Components Co., Manchester, Mo.*

Parts Cleaning Unit

Designed for small shops

Magnus Chemical Company, Inc.:
The Mini Dip unit being mar-

keted is a 45 pound capacity parts cleaning machine for small shops—and for decentralized cleaning in the larger ones. The new unit consists of a 20 gallon openhead drum—packed with 15 gallons of decarbonizing, de-sludging, devarnishing compound—a basket that fits inside the drum and the compressed-air-operated, automatically agi-

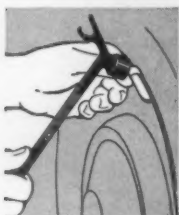
tated Mini Dip unit that fits over the top of the drum. Used with the Mini Dip machine, a me-



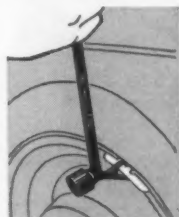
chanic loads the basket, sets the unit into operation and returns to principal duties. Write: *Magnus Chemical Company, Inc., Department M-6-17, Garwood, New Jersey.*

3 ALL-NEW TIMESAVERS FROM K-D

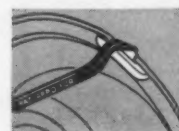
One Wheel Weight Tool— K-D No. 470— installs and removes all types



Hammers weight into place and crimps it



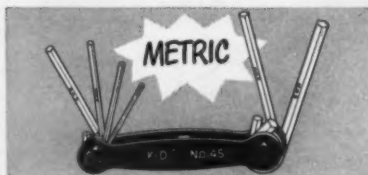
Hooks into hole, pries weight off



Special pointed end for removal of weights without holes



\$3.15, Eastern resale—slightly higher in West



\$1.15, Eastern resale—slightly higher in West

K-D No. 45 Metric Hex Key Pak — with all 6 popular small sizes

A basic pocket tool (3 7/8" folded) for servicing foreign makes. Mounted in sturdy steel handle. Sizes: 2mm, 2 1/2mm, 3mm, 4mm, 5mm, 6mm. Other sizes also available.

K-D No. 284 Rear Brake Drum Puller — frees frozen Chevrolet drums on all models from 1940 on

No heat, no distortion

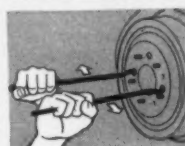
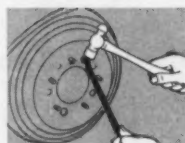


\$2.75, Eastern resale—slightly higher in West

Two pullers,
two easy steps

1. On opposite sides of the axle, drive wedge-shaped ends of pullers between drum and axle flange in direction of axle.

2. Pry drum loose with outward alternate rocking. Use both pullers to prevent binding.



Seal It Right

Continued from page 41

seal gets the kind of necessary care it must have in order to do the job it was designed to do. First, special seal installing tools are a must. You can't install a seal that will be concentric with a shaft by using a punch and hammer. Seals must be flush and square with the shaft surface it was designed to seal. This can only be accomplished with the use of a seal installing tool. There are many of these on the market today. It will pay you handsome dividends to use them.

Check All Surfaces

Before installing the seal always check the shaft surface and the bore into which the seal is placed. Make sure that there are no burrs on the shaft or nicks on the seal bearing surface. Inspect the bushings or bearings of the device being sealed. Eccentric runout of the shaft will always defeat the best efforts of both the manufacturer and the installer. Check the lip of the seal before installation. Sometimes damage to the seal can occur in transit or handling. Coat the outer circumference of the seal case with a suitable sealer. This is to prevent the possibility of a leak at this point. Then with the use of a seal driver, as shown in our illustration, install the seal into the housing. Don't forget to wipe off the excess sealer before assembling the job.

Write for free catalog — or see your tool supplier

K-D TOOLS

Make Hard Jobs Easy

K-D MANUFACTURING COMPANY

Lancaster, Pa.

a new, SIMPLE way to
cut alinement time in
HALF and DOUBLE
YOUR PROFITS!

NOW! ALINEMENT at a GLANCE!

checkomatic

**PRE-FIGURED, FACTORY-
APPROVED CAMBER-
CASTER SETTINGS
FOR ALL U.S. CARS!**



1st

from the 7 Check-O-Matic
Plates select the one for the car
you are going to aline.

2nd

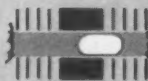
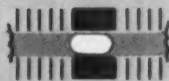


place the Check-O-Matic Plate on
the Bear 27 Magnetic Gauge.

THEN . . .

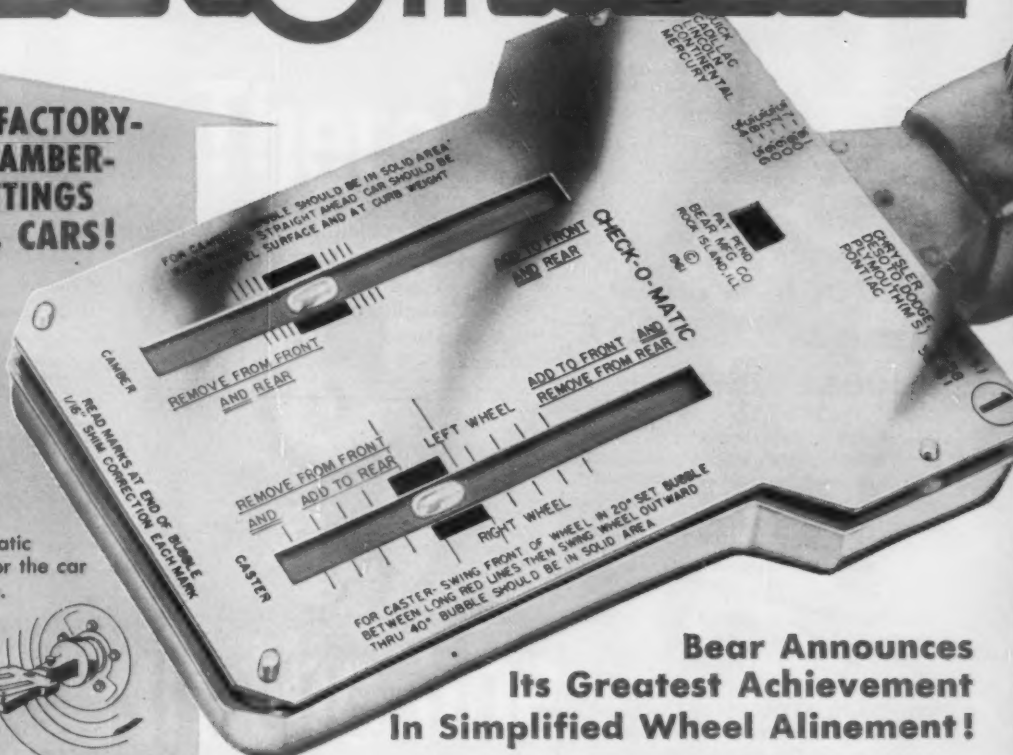
AT A GLANCE . . . the BUBBLE
tells you whether settings are

Correct or Not Correct



AT A GLANCE . . . Check-O-Matic
tells you how to correct BOTH Camber
and Caster in ONE operation.

READ MARKS AT END OF BUBBLE
1/16" SHIM CORRECTION EACH MARK

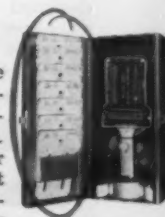


**Bear Announces
Its Greatest Achievement
In Simplified Wheel Alinement!**

Now, Bear makes it easier than ever for you to cash in on booming alinement profits! Check-O-Matic takes all of the mystery and guess-work out of alinement work. No need to refer to specification charts or to do any calculating. Check-O-Matic tells you *at a glance* whether camber and caster are OK or need correction. If corrections are needed, Check-O-Matic tells you how to make adjustments on the particular car. Operators without previous alinement experience can now do a perfect job in minutes.

**You Have a Choice of 3
Check-O-Matic Services!**

You can get Check-O-Matic as part of the new Portaliner Service—the first truly portable alinement service that includes everything you need to get into BIG PROFIT business. You can get Check-O-Matic with the Bear 27 Magnetic Gauge in a sturdy, compact carrying case—or—you can order the Check-O-Matic Plates in a handy indexed holder to use with your present Bear 27 Gauge.



Get this FREE Check-O-Matic Bulletin!

BEAR MFG. CO., Dept. M10, Rock Island, Illinois

Send my Free Check-O-Matic Bulletin without cost or obligation.

Name.....

Address.....

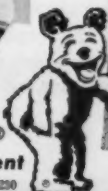
City.....Zone.....State.....

BEAR

—the greatest name in Wheel Alinement

R-250

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Cut costs, save time with B&D accessories

Regardless of whether you're interested in wet or dry pick-up, you'll find B&D-designed accessories equip your unit with the versatility needed to finish the job ahead of schedule.



STANDARD ATTACHMENTS feature a full line of ruggedly built brushes, squeegees, nozzles, straight and curved extensions for wet or dry pick-up.



LIGHTWEIGHT COMMERCIAL ATTACHMENTS include handsomely-designed floor and dust brushes, upholstery and drapery nozzles, and extension tubes.



HEAVY-DUTY ATTACHMENTS offer you a longer-lasting quality line for wet and dry pick-up.

Your local B&D distributor has them all. Give him a call today!



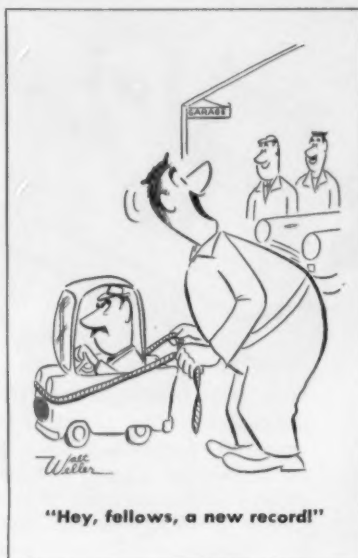
Black & Decker
ACCESSORIES
DESIGNED FOR THE TOOL

Vehicle InspectionContinued from page 96

senger car must be inspected in the same month. When it passes, it gets a windshield sticker with a big number indicating the month of the following year in which the car inspection and registration expire.

Thus New Jersey does not have to issue new license plates each year. Police can instantly tell both inspection and registration status by the color and number on the sticker.

A rejected car gets a 14-day sticker to drive on while the necessary mechanical adjustments are made. If the vehicle is rejected on second try for the same defect, he might not get another temporary sticker. Caught on the road with an expired sticker, he gets a \$10 ticket.



All vehicles must undergo inspection except motorcycles, road machinery and agricultural vehicles. Buses get two yearly inspections, and school buses are subject to especially stiff requirements.

New Jersey does not allow any stickers except the inspection sticker on the front windshield. Anything such as baby boots and other obstructions hung on the rear-view mirror are taboo too.

The inspection force has police powers, and joins state police in surprise spot-checks on the highway, particularly around holiday seasons. Trucks are a favorite tar-

get. Warnings are issued requiring re-inspection. Cars involved in accidents are also required to get new inspections.

Periodically, lawmakers have attacked the system on the thesis that mechanical defects have never been proved an important cause of accidents. But Parsekian answers that this is like asking how many fires do not occur because of fire hazard inspections, or "How many children reach adulthood because we have school crossing guards?"

A driver in an accident will almost invariably claim his car was in perfect condition, with insurance such an important issue. But, says Parsekian:

"In a 12-month period, the number of items for which (inspection) rejections are made, totals approximately two and a half million. No one can say that the correction of two and a half million (defects) does not increase the safety of the motoring public."

He cites a study by the Pennsylvania Turnpike Commission showing that vehicle failures, including blow-outs, accounted for nearly 14 per cent of Turnpike accidents. Other studies show defects at least a factor in half the studied accidents.

New Jersey's inspection law was passed as part of a massive attack on the highway death rate that stood at 12.4 per 100 million miles in 1937. The next year it dropped dramatically to 8.2.

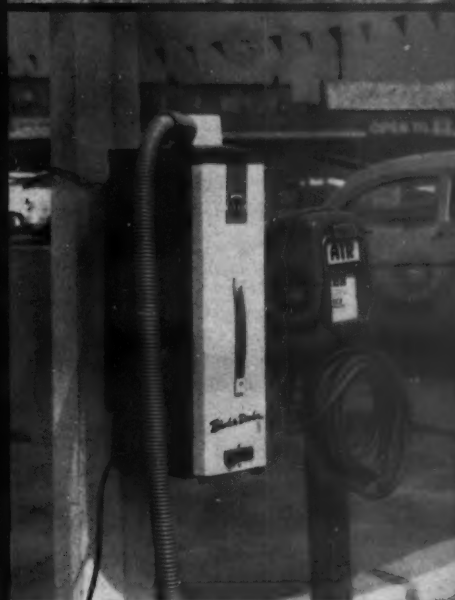
It has steadily dropped ever since, and preliminary estimates for 1960, based on gasoline sales, put it at less than 3 for the first time.

This is a better record than all but a handful of rural states, a tribute to the safety program of the state with the nation's heaviest traffic volume.

Inspection Sticker Needed For Delaware Registration

Dover, Delaware—The state of Delaware has had government inspection of motor vehicles since before World War II and is one of only three areas in the nation which maintains such a system.

Continued on page 110



There's 9 in the line



And what pick-up! B&D's new, longer line of heavy-duty vacuums cleans up all dirt and grit, even wet sludge in the grease pit!

"Sweep" out a car, "mop" up a wet floor . . . Black & Decker's new line of nine heavy-duty vacuum cleaners helps any garage keep its face clean. You can clean up anywhere, have power to spare. Mobility is no problem. And if you choose the versatile, whisper-quiet No. 25, you can carry it wherever you go . . . strap it on your back to clean off the top of the stock rack.

Redesigned tank inlets make for extra capacities (the entire line ranges from $\frac{1}{4}$ bushel to 40 gallons). New drain-off outlets are standard on stainless

models for quick and easy wet-disposal. All attachments are as streamlined as next year's car. And, don't forget famous B&D Service. Check into the new line of nine NOW at most B&D Jobbers . . . for low monthly payments. *For sales or service, look in the Yellow Pages under . . .*



Black & Decker®

WORLD'S LARGEST MAKER OF POWER TOOLS

THE BLACK & DECKER MFG. Co., Dept. 5106
Towson 4, Md. (In Canada, Brockville, Ont.)

- ☐ Please arrange a demonstration of B&D Vacuum Cleaner line
- ☐ Please send additional information on.....

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....



ANOTHER **THERMOID** BIG T



THERMOID Big T Fender Covers

Get this top-quality, sponge-rubber-backed fender cover—a \$6.45 value—for only \$2.98. Get this cost back quickly by selling the FREE BIG T FAN BELT or REDI-CURV radiator hose given you with every fender cover.

Check these quality features:

- 1/2" high ridges on crown of cover make an ideal recess to hold hand tools and small parts—a real timesaver.
- Nonslip, lightweight cover.
- Fabric reinforced neoprene top, sulphur-free sponge rubber backing, vulcanized into a one-piece construction.
- Improved cleaning—wipe with gas, upholstery cleaner or detergent.

HERE'S THE DEAL...

Buy 12 Thermoid Big T Quality Fan Belts or Redi-Curv Radiator Hose in any combination (6-6, 9-3, 10-2, 12-0, etc.)

This entitles you to a \$6.45 Quality Big T Fender Cover for only

One set Window Banners

One Fan Belt (V-29, V-123, V-180) or one Redi-Curv Radiator Hose (RC-505, RC-509, RC-526)

TOTAL

\$18.36*

2.98

FREE

FREE

\$21.34

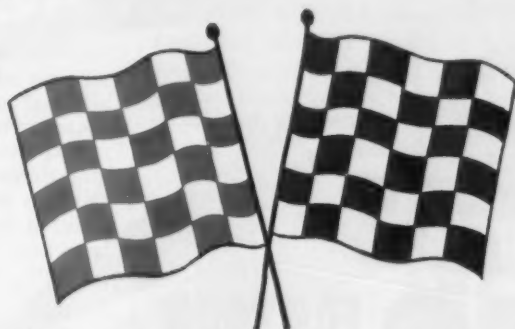
You Sell the FREE Big T Fan Belt or Radiator Hose and you more than pay for the Fender Cover.

Buy a minimum stock of hose and belts now for Spring and Summer sales and you'll receive a good supply of Big T Fender Covers.

Nothing could be easier—Equip your shop now with a complete set of these sturdy, high-quality fender covers.

*Approximate

PROFIT MAKING DEAL FOR YOU



'500' Quality "Redi-Curv" Hose

Winner of Indianapolis '500' in 1961 and every year since 1950.
 • Specially Compounded Rubber . . . resists effects of oil, ozone, chemicals. • Maximum Cooling System Protection . . . can't chip or flake to clog radiator. • Always Fresh . . . resists aging on the shelf or on the car. • Heavy-Duty Construction . . . steel coil and tire cord reinforced for maximum strength and flexibility. • Maximum Coverage . . . every part number a fast mover.

Big T Quality Fan Belts

- One Premium Quality . . . minimum inventory dollars.
- Prestretched Construction . . . for longer life.
- Neoprene Jacketed . . . oil and grease resistant.
- Application Engineered . . . best fit for every drive.
- All-Service Coverage . . . includes off-highway use.

There's no limit—order as many deals as you need today—re-equip your shop now with all the fender covers you need—restock your shelves with "need it right now" merchandise for spring and summer driving—

Call your distributor salesman today, or send in the attached coupon for the name of your nearest **THERMOID** BIG T distributor

Thermoid Division, Dept. 300
 200 Whitehead Road, Trenton 6, New Jersey

You bet—I need some Fender Covers and I am interested in the Fan Belt and REDI-CURV Hose deal.

Name _____

Address _____

City _____ Zone _____ State _____

My usual jobber supplier is _____

PORTER

**THERMOID DIVISION
 H. K. PORTER COMPANY, INC.**

200 WHITEHEAD ROAD, TRENTON 6, NEW JERSEY

Vehicle Inspection Continued from page 106

According to the Delaware Safety Council the other two areas are New Jersey and Washington, D.C. All three relying on mechanical equipment for inspection.

Before the state adopted their present system they licensed some 78 garages or service stations as inspection stations.

The change was brought about largely by the Delaware Safety Council, which set up inspection

equipment at temporary inspection lanes to demonstrate their effectiveness to officials and the public in 1929-37 during the administration of former Governor C. Douglass Buck.

Before World War II, vehicles were inspected twice a year. During the War, however, this was changed to once a year. That is the present requirement—annually as the registration fee is paid.

Registration expires on four dates during the year and the lanes are usually jammed for several days in advance of the deadlines.

The inspection itself is conducted by the state's Motor Vehicle Division at state maintained inspection stations—one in each county.

There is no separate charge for inspection, it is included in the registration fee. The personnel who actually do the inspecting are political appointees and are not required to be mechanics.

Inspections begin with the horn, stop lights and windshield wipers, then the front end is jacked up for a test of the wheels. Headlights are tested on both upper and lower beams, using a mechanical device for measuring their intensity. The car is then driven for a short run in the testing lane and comes to a quick stop on a brake-testing device. Then the parking brake is tested by a second short run.

The accuracy of the testing is completely dependent on the personnel who are doing the testing.

A motor vehicle owner must have a card indicating he has had his car inspected and approved before he may pay the registration fee and renew the registration. This is done at the same building which houses the inspection lanes.

Maryland Inspection Legislation Is Still Lagging

Baltimore, Md.—Rumblings of new moves to bring back state inspection of motor vehicles in Maryland are being heard—faintly. The state actually has an old—and ignored—law on its books calling for the annual inspection of motor vehicles.

The regulation calling for inspection of motor vehicles was more or less officially laid aside during World War II. During the past 10-12 years several attempts have been made by the American Automobile Association, automobile dealer's groups and legislators to pass a new and effective state inspection law but so far, none has met with success in the state legislature.

The American Automobile Association's Baltimore branch says the club is on record as being favor-

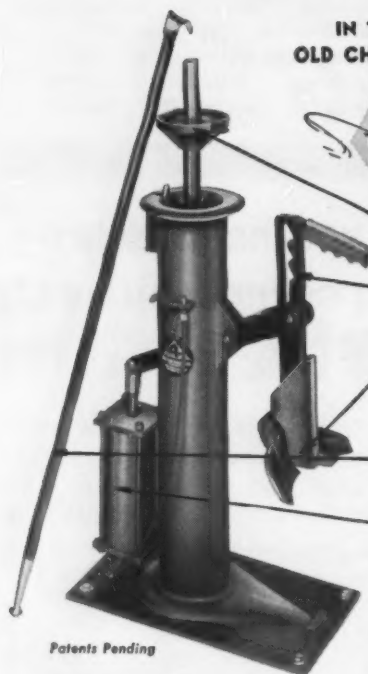
Continued on page 112

Trade-in Breakthrough

Vacation Special **\$40** FOR YOUR OLD TIRE CHANGER

IN TRADE FOR THIS BIG FOUR LCP. YOUR OLD CHANGER'S WORTH MORE TO BIG FOUR!

LCP Regular Price, complete	\$139.50
Less trade-in (or more)	40.00
NET PRICE, LIMITED TIME	\$ 99.50



Patents Pending

FASTEST LOCK simply drops to lock. Holds tire securely for mounting and demounting.

GREATEST RANGE — Ratchet adjustment fits all size tires, 8 thru 19.5 inch, even small boat trailer tires. No adapters needed.

EXCLUSIVE CANTILEVER Bead-Breaker doubles power. More than a ton of force frees beads effortlessly, safely, positively protecting air-sealing beads. **AIR POWER DOES THE WORK.**

2-in-1 MOUNT-DEMOUNT TOOL — Easiest to use, easiest on beads. Complete assurance against nicks or cuts.

ALL-STEEL POWER CYLINDER and piston assembly, tested for 600,000 cycles or 15 years operation and still hasn't missed.

3½ YEARS USE and field-test. Not a new "gimmick."

LCP PACKS MORE POWER PER DOLLAR THAN ANY OTHER

BIG 4 INDUSTRIES, INC.

Foster, Ohio

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International Div.:
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525 Richmond St., Toronto, Ont.

BIG FOUR INDUSTRIES, INC.

PO Box 444NA, Foster, Ohio

Let's sharpen your pencil to trade in my old tire changer on a new LCP. I'm using a _____ (make) now.

Condition: Good ☐ Fair ☐ Poor ☐

Write me how you can trade.

Shop or Station Name _____

Street _____

City _____

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State _____

Signed _____

PERFORMABILITY



U.S. Pat. No. 2,789,872 Stainless Steel Oil Ring

THE *LARK* BY STUDEBAKER

KromeX by Sealed Power

with Stainless Steel Oil Rings

TESTED AND APPROVED

for all **Studebaker Sealed** **Packard Power**

KromeX replacement sets

KromeX piston ring sets with Stainless Steel oil rings* deliver unmatched oil control and last longer for these 5 reasons—

- ① Easy to install
- ② Seat instantly
- ③ Hold their fit in the cylinder
- ④ Maintain their original tension
- ⑤ Chrome-plated side rails for extra life

For outstanding performance, every KromeX set also has chrome-plated top compression rings.

- Positive blow-by control • Factory-lapped for instant seating
- Long Life

*Manufactured by Sealed Power Corporation, Muskegon, Michigan



PRECISION BUILT PRODUCTS

Parts and Service Division

STUDEBAKER-PACKARD CORPORATION

SOUTH BEND 27, INDIANA AND ZONES

Vehicle Inspection Continued from page 110

able to such a law. The state commissioner of motor vehicles, John R. Jewell, says his department favors an inspection law and plans to make fresh recommendations along these lines to the Maryland General Assembly.

Jewell said, however, that it might be some time before the commission would be able to make its feelings known via formal recommendation to the lawmakers.

Maryland, according to many persons in the automobile trade, has a reputation as being, "the place to dump cars that won't pass New Jersey or Pennsylvania inspections."

The state automobile dealers association reportedly doesn't like this reputation and hints that it would back efforts to bring about state inspection regulations.

All interested groups in the

state seem to be in accord that the inspection setup needed in Maryland would be one whereby the state would operate the inspection stations and cars would be inspected on an annual basis.

Thus, any repair work deemed necessary by the state's inspectors, would be done in a garage of the vehicle owner's choice and not by the man who inspected the vehicle.

Commissioner Jewell commented along these lines when he explained why the state had dropped its old inspection system of having the work handled by private garages under state license.

Jewell said, "That's why the old system we had before the war didn't work out. It set up private garages as inspection stations. In many cases if you were a good customer of the man who inspected your car it was inspected in a breeze. If you were not, then you might get hit with all sorts of expensive work that in some cases wasn't needed."

Most people in the state concede that the old inspection system of the 1930's was "a racket."

Now everyone seems to be waiting for someone to drop a proposal for a new inspection law into the legislative hopper at Annapolis. At the present time, no such proposal is being drafted, as far as its known.

West Virginia System Virtually Complaint-Free

Charleston, W.Va.—West Virginia's six-year-old motor vehicle inspection law operates on an almost complaint-free basis, despite opposition charges back in 1955 that it would let private garages victimize motorists.

In the nearly six years since the law took effect, there has been no serious effort in the Legislature to amend or repeal it, and no noticeable public opposition.

Sponsors of the law based their campaign on the fact that West Virginia was being made a "graveyard" of jalopies and other unsafe vehicles which could not pass inspections required in most surrounding states.

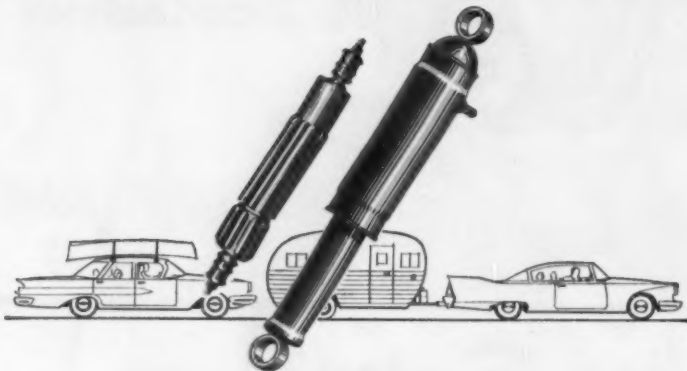
The main question was whether private garages should be licensed to conduct inspections or whether

Continued on page 121

Give customers the best ride for their money with

GOLDEN GLIDE

Shock-Absorbers * Load-Absorbers



Whether it's Golden Glide Shock Absorbers all around or Golden Glide shocks in front and Load-Absorbers in back, your customers will get a truly *balanced ride*. Golden Glide shocks provide the velvety-smooth ride customers expect from new-car suspensions. Load-Absorbers in place of rear shocks mean the car *always* rides level—loaded heavy or light. For extra-heavy loads—house or boat trailer, etc.—the motorist just adds air pressure to the Load-Absorbers.

Sell this top-performance team for more satisfied customers and more profits. Golden Glide means smooth going—for you and for your customers. Call your jobber today for full details.

THE GOLDEN GLIDE SHOCK ABSORBER COMPANY

Cleveland 15, Ohio

GOLDEN GLIDE
Shock-Absorbers * Load-Absorbers

Readers' Clearinghouse . . . Continued from page 91

wire off nearest to me and put on number 1 clothes pin on it and keep on doing this till I have all 4 wires out with pins on them from the one bank. Lay them to one side. Then remove the distributor cap and the rest of the wires and lay them to the other side. Now, I am ready to go to work. This idea will work on other cars that has distributor in the center of the motor that has short wires on it.

Sam Scelfo
Hammond, Ind.

New Method for Removing Slip-In Main Bearings

I have found the simplest tool for removing slip shell main bearing, after connecting rods have been removed. Use a length of $\frac{1}{4}$ rod. Slip it through connecting rod hole into main bearing. Rotate the shaft to push out the bearing shell.

Ray Mitchell
Ridgeland, S.C.

Time Saver When Removing Ford Starters

I have an idea that will make it easier to remove a '54-'56 Ford starter. Remove right front tire. Then under the rear of the fender cut about 1 foot of the fender skirt at rear, where starter

is located. When starter is repaired and replaced, it can be welded back or bolted back.

Clarence M. Causey
Mullins, S.C.

Using Your Arc Welder To Remove Broken Axles

Here's a sure way for removing broken axle stubs from full

floating type rear axles. Take $\frac{3}{16}$ inch acetylene welding rod and fasten to short low temp. electric rod. Then also take 1 inch hose 36 inches long. Put hose against broken axle. Set arc to 120 amps. Weld fast to broken axle, and pull out. Hose is used to keep arc from biting or arcing to rear end housing or carrier.

John O'Gurek
12 West Holland St.
Summit Hill, Pa.

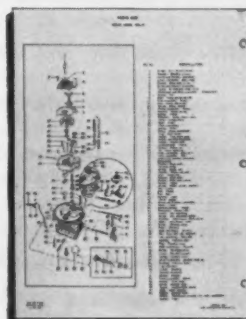
Do You Suffer from TUNE-UP-PHOBIA?

Get Fast Relief* with PACCO TUNE-UP KITS

*and money, too



Every Pacco Carburetor Tune-Up Kit contains step-by-step instructions for disassembly, cleaning, assembly, and adjustment of the particular carburetor you are working on . . . plus a clear diagram of every part.



If you can read, you can't go wrong. You can tune up carburetors like an expert—and make good money doing it.

Always insist on PACCO—the COMPLETE Tune-Up Kit

There's one for all American cars, and most of the popular foreign makes.



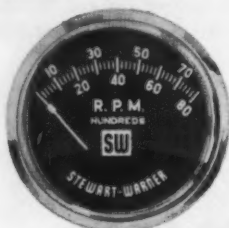
PRECISION AUTOMOTIVE COMPONENTS COMPANY
Manchester, Missouri



Detroit Report...

Protect Engines!

No matter what kind of car... from compact to pick-up to sports car... a Stewart-Warner "100" Series Electric Tachometer will help it achieve the engine performance and protection necessary for safe, economical driving.



Precision-engineered Stewart-Warner tachometers give accurate, flutter-free readings at every speed. Available for all distributor ignition engines of 4, 6 or 8 cylinders; 6 and 12 volt systems; and with dials to 5000, 6000 or 8000 r.p.m. Drivers have a choice of top-of-dash, through-dash or steering-post mounting.

Amber To Turn?

Detroit has launched another of its cooperative car-lighting research programs. The manufacturers are now testing amber-colored turn signals, more quickly spotted than red ones. Another idea being explored is an increase in the intensity of the brake lights for daytime driving.

Those Aluminum V-6's

Come next fall when the trumpets blare for the 1962 models, look for at least one and possibly three new aluminum V-6 engines. It (or they) will appear on Detroit middle-priced compacts, replacing the aluminum V-8's now being offered to car buyers. Production lines have already been set up under high priority. As of mid-spring, the only thing that could go wrong is some unforeseen difficulty in producing them in sufficient volume and quantity.

That American Volkswagen

You can forget Ford's version of the sub-compact VW until the spring of 1962. Despite reports to the contrary, the company's four-

cylinder, front-drive Cardinal is nowhere near the production stage.

Up Wagons, Up Convertibles

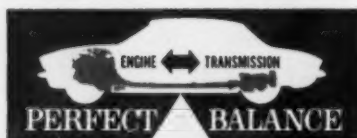
At last fall's National Automobile Show in Detroit, manufacturers' agents button-holed motorists, asking what their next car would be. The compiled results, now made public: hardtops down 7 per cent other sedans down 12 1/2, station wagons up 8.7, convertibles up a whopping 13 per cent.

It's Here

Pontiac's new Tempest coupe is here!

Two sharp new coupes join the Tempest family. Now in addition to the sedan and station wagon... there is the straight six-passenger model and the custom bucket seat version.

The coupes have shorter roof lines, longer rear decks... and a rear window on the custom coupe gives it a "town car look"... and available at Pontiac dealers now.



Both coupes have independent suspension at all four wheels. Swing axles. Engine in front—transmission in rear. Plus BIG 15-inch wheels on a Wide-Track... so drivers can cut a hairpin curve flat and steady.

Pontiac calls the shot on performance with:

A gas-saving, 4-cylinder, inclined engine.

Horsepower range from 110 to 155.

Perfect balance between engine and transmission.

Up to the minute styling.

Another Compact On The Way?

Add another "senior compact" to the two that are being readied by the Chevrolet and Ford Division for announcement this fall. It's to be by the Lincoln-Mercury Division, and will fit in between the Comet's 114-inch wheelbase and the Mer-

cury's 120-inches. Working title of the new car: "Canadian Y."

The smaller Merc—by whatever name it assumes eventually—will not differ much in size and mechanical equipment from the Ford Division's "Canadian X." As against the latter's 115 1/2-inch wheelbase, the "Y" will have one of 116 1/2. Chevy's senior compact, slightly smaller, will offer a straight six and a V-8 as options. Currently it's dubbed the H-35, and when it joins the GM family it may be christened the Corsair.

In case the public isn't already confused by the presence of so many compact cars in the automobile

Gus Wilson's

A regularly monthly feature of Popular Science

Gus was really on a spot, and it was all Stan Hicks' fault. Gus's young assistant was so sure of his boss's ability to track down any automotive ailment that he could hardly wait to accept the challenge offered by the high-school auto-mechanics teacher.

The teacher's class had diagnosed the trouble with the school's balky station wagon—using all the latest electronic gadgetry.

POPULAR SCIENCE READERS

showrooms, the additions for the 1962 model year will bring the total to 14. All told, this will represent a buyer's smorgasbord of 27 brands of domestic cars, not counting Chevy's sporty Corvette. That's eight more than the spectrum showed in 1959, the low-point year in buyers' choices for the last decade.

The H-35 will have a unique suspension in back—a spring with only one leaf. Chevy is adopting it—for this car only—because it reduces car weight by 20 pounds and offers a softer ride.

Other motor makers are dubious about driver reaction to skinny-looking springs. Yet Ford is reported to

from Popular Science Monthly

355 Lexington Avenue, New York 17, New York

be making eyes at the idea, possibly for one of its 1962 models.

Don't Break An Engine's Back

When a car engine gets tired, the symptoms are easy to spot. Performance is sluggish, gas mileage drops off... the engine begins to burn oil. The problem is wear. The solution—have parts on hand so that your customers will always have them when they need them.

Replacing valves and rings is not enough. Why? Piston rings usually control oil from slipping into the combustion chamber, but even new rings can't control the more

Model Garage



gets. Now Stan had committed Gus to doing the same job with nothing but old-time trouble-shooting know-how.

Of course the Model Garage-man comes through—and his only tools are a strip of newspaper, a wad of chewing gum, and a screwdriver. See "Gus Separates the Men from the Boys" in June PS.

ARE YOUR BEST CUSTOMERS

than 25 times normal amount of oil thrown off by worn bearings. This excess oil is forced into the combustion chamber where it burns to carbon and varnish. Deposits build up on valves, rings get clogged, and plugs become fouled.

Precision engine bearings are vital to getting maximum efficiency from engines. That's why Federal-Mogul bearings are made to tolerances that give exact oil clearances... tolerances as close as .00025". That's why Federal-Mogul replacement's bearings are your best bet to keep your customers happy.

MOTOR AGE • June 1961

Offbeat Designs

The 1963 Chrysler Corporation cars... they're only 17 months from introduction... are expected to have left-of-center fins and other unbalanced items, somewhat like the Plymouth dream car unveiled a few months ago.

Indianapolis + Proto = Success

What you are reading now is already history.

Memorial Day the motor event of the year took place as it has for years... the drivers in the famous "500" classic were lined up and after hours of grueling and tortuous driving a new winner of this classic emerged.

Proto Tool Company provided two gold torquers to be awarded to the pole position winner's master mechanic and two complete Proto Master sets in Mobile Tool Cabinets were given to the winner of the "500" and to his master mechanic.

Not Known For Chrome

Autolite maintains that spark plugs are not sold on the basis of appearance. They are pushing conservative blue spark plugs these days... not bright chrome plated ones.

Autolite plugs are heat sealed to prevent compression leakage. These are sold for standard automobiles.

Heat sealed plugs are used for severe military use, special racing plugs and aircraft plugs.

Autolite is proud that plugs sold for normal driving are heat sealed. Not only do they heat seal the center electrode to the insulator, but for extra protection, seal the insulator to the outer steel shell. Because of this dual-heat sealing process, Autolite plugs cannot be plated. Therefore their plugs are not pretty but protect against loss of power.

Ford Truck Businessmen

Mister Softee put soft ice cream on wheels... and over 1000 Americans go into business for themselves. Because of Ford's low cost dependability keeping trucks and freezing equipment in good condition actually takes less than 2.5% of dealer income.

Leading Automotive Advertisers Appearing in June POPULAR SCIENCE

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Institutional

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Motorcraft Division,
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Corvair 95

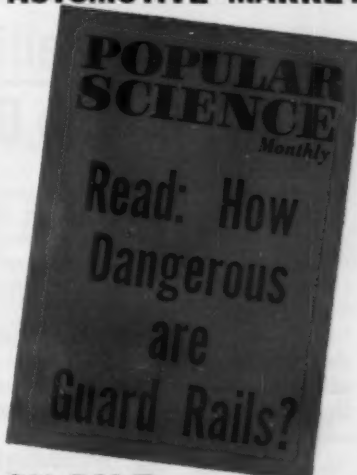
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Trucks

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AMERICA'S FOREMOST AUTOMOTIVE MARKET



ON SALE —
AT YOUR NEWSSTAND

Service Managers' Notebook

Continued from page 99

front of the transmission. Keeping these hints in mind can save you the trouble of tearing the transmission down for a noise complaint.

GM transmission staying in third when stopped

It's been reported that some early 1961 and late '60 GM auto-

matic transmissions have stuck in third gear after stopping. This condition has been traced to the 2-3 shift valve spring fouling on a step in the valve bore. A new spring is available with modified coil spring ends. New spring part # 8620807. Also, a special spring spacer-guide is available and should be used with this modification.



"Now We're Selling Tubeless Valves We Used to Give them away..."

"Since we got our Dill Dispenser-Pak, we have been charging \$1.00 plus 3 cents Sales Tax on every tubeless tire valve," says Boyd Custer, owner of Custer's Shell in Cuyahoga Falls, Ohio.

"Until I saw that new package with the dispenser, the mobile, and the safety gage all together, I had never thought much about charging for

snap-in valves. It was then I realized that each valve cost me about 41¢, so I was giving away a big hunk of my tire repair profit. Now I charge for every valve, make 59¢ profit and haven't had a single customer complaint."

Ask your supplier about the new Dispenser Pak . . . you pay no more to have valves at your fingertips.

DILL®

Manufacturing Company

700 East 82nd Street • Cleveland 3, Ohio
Offices in Los Angeles, Akron, and Toronto

Editorial

Continued from page 65

'61 the second highest production year."

Food for thought comes from Frank K. Lawler, Editor of *Food Engineering* who points out, "Food manufacturers' sales are increasing at a 5 per cent annual rate, twice as fast as population. Business has reached \$55 billion annual level. Profit margin has improved to 3 per cent of sales dollar. Capital expenditures are up to \$1 billion yearly rate as manufacturers accelerate automation and equip to make new products."

More expansion in the gas industry . . . "Gas industry budget for new construction in 1961 tops \$2 billion. New gas transmission facilities will take half of this, bringing additional natural gas to distribution companies, who must continue to expand their facilities to meet demand. Sales expected to reach record \$6 billion this year," wires Fred Ebdon, Editor of *Gas* magazine.

And, from the West Coast, comes this message from Milton Albin, Editor of *Hardware World*, "Western hardware dealers have broken through the recession barriers particularly in most blighted areas. The change is not great but indicative of a trend toward a modest increase in the last half of '61. Most trade shows in the West have found buyers in optimistic mood. Dealers expect good Christmas business."

Why have we gone so far afield to give you these thoughts? First, these are Business Editors covering all parts of the country and in many phases of business and trade. Secondly, it is encouraging to the Editor of *Motor Age*, to be associated with such stalwarts.

Pretty soon, business will be bustin' out all over! (F.P.T.)

Next Month

**"How to Solve
the Mechanic
Shortage"**

Merchandising Ideas Continued from page 84

wasn't as important as the manner in which we bestowed it. This was so because the men are whipped into greater activity by their wives' tongues than ever they have been by any kind of plan we have ever tried. Women keep themselves informed of the progress of each man—and of the team—as it is tallied up on the tote board in the shop. They encourage not only their own mates to do their best, but also spur on the other members of the team." *Henry Joseph, Joseph's Auto Service, Box 22, Gardenville, Pa.*

Sell Bulbs & Stoplight Switches By Checking Faulty Stoplights

Here is an idea you may be able to use to advantage. When customers pull in to refuel at

your service station ask them to step on their brake pedal. About half of them are found to have stoplights that don't work! The result is a nice increase in the sale of bulbs and stoplight switches. Not only that, but extra lube jobs, oil changes, and other items grow out of getting a car into the service bay. *Wilfred Beaver, 4609 N. Western Ave., Chicago 25, Ill.*

Use The "YOU" Angle To Sell Sales & Services

We obtain a higher percentage of sales by using the "you" angle. Our first move is to get the automotive item into the hands of the prospect. Then we give him a few facts about what "you" can do with "your" product, how

Continued on page 124

it's new and easier to handle...

GUNK®

C-C

CARBURETOR CLEANER



will not burn hands—leaves no lingering odor

You never had one so good as GUNK C-C! It's the safe, 100% active carburetor cleaner that cleans clean! Digests all carbon residue, varnish, tars, and grease. Available now in 5 gallon size bench kits with or without parts basket . . . also 15, 30 and 55 gallon size drums. See your GUNK Jobber, or ask us for details.

"Dunk 'em in GUNK"

NOW—The choice is yours—**GUNK CC**—The easiest carburetor cleaner to work with.
GUNK HS—The world's most powerful carbon digester!

© Reg. trade mark.



GUNK CHICAGO CO., River Forest, Illinois
serving the Midwest and Southwest



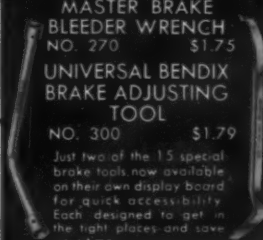
RADIATOR SPECIALTY CO., Charlotte, No. Carolina
serving the East, Southeast and far West

In Canada: RADIATOR SPECIALTY CO. OF CANADA LTD. TORONTO

Check your Efficiency Factor!

Check your tool kit for these time-saving specials by Herbrand. If you don't have them all, you aren't saving all the time possible! Here are tools specially designed for mechanics interested in saving time by having the right tool for each job.

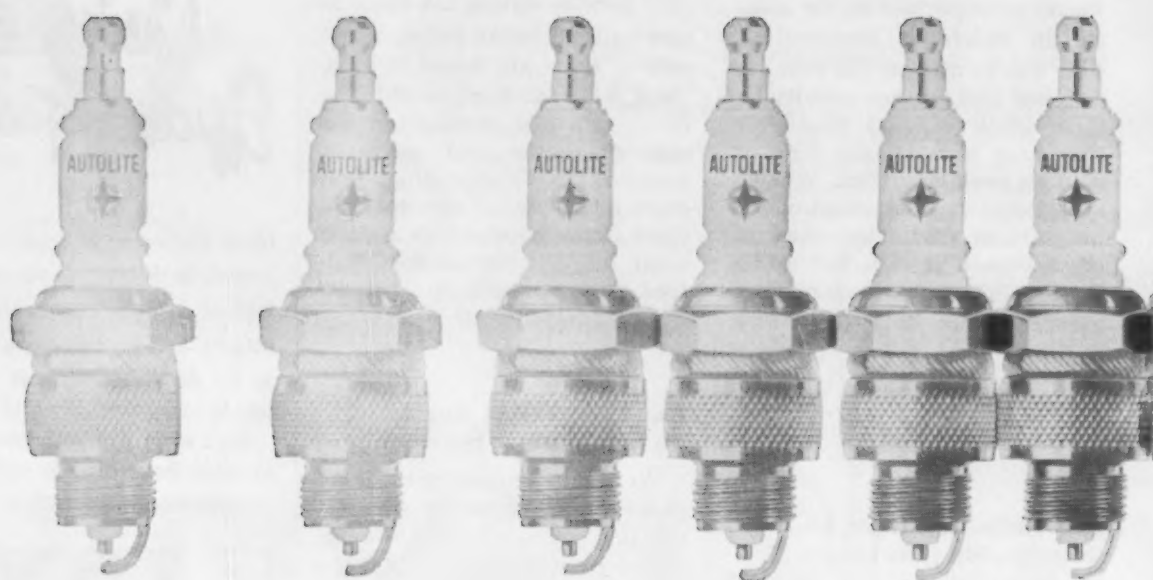
Don't waste time with tools not designed for the purpose. Use this check list to raise your efficiency factor!

HAVE	OIL FILTER TOOL NO. 196 \$1.98  Use with 3/8" attachments to remove and replace oil filters on all American cars. Compact, cam-acting design handles either vertical or horizontal mounted filters.
DO NOT HAVE	
HAVE	"SNAP-GAP POINT SETTING TOOL NO. 2110 \$4.95  Set points simply by taking off cap and rotor. Slip sleeve over cam and gauge. No worry about high point on cam!
DO NOT HAVE	
HAVE	MASTER BRAKE BLEEDER WRENCH NO. 270 \$1.75 UNIVERSAL BENDIX BRAKE ADJUSTING TOOL NO. 300 \$1.79  Just two of the 15 special brake tools now available on their own display board for quick accessibility. Each designed to get in the tight places and save your time.
DO NOT HAVE	

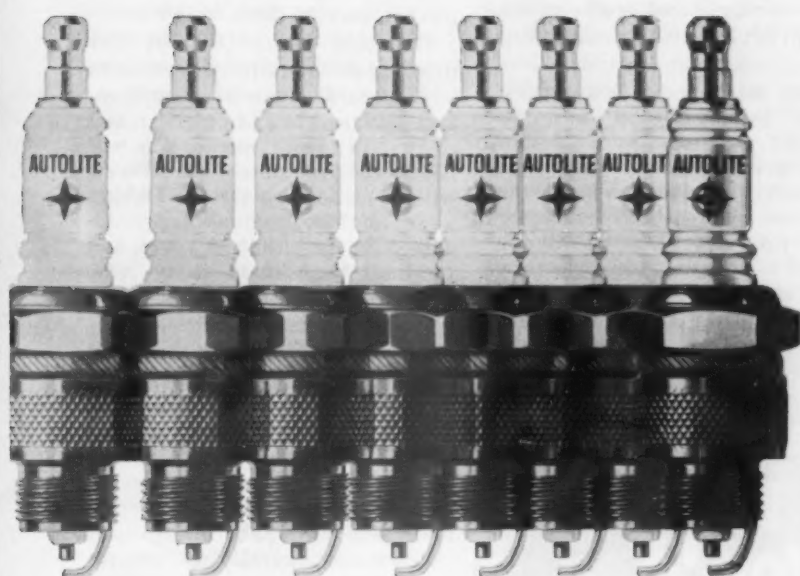
HERBRAND — Headquarters for Job-Crafted Tools. See Your Jobber.

Herbrand Tools

HERBRAND DIVISION - THE BINGHAM-HERBRAND CORPORATION
FREMONT, OHIO



THIS SPARK PLUG



IS GOING PLACES!

What does this mean to you? Plenty, if you sell spark plugs. Take advertising support, for instance. And the confidence your customers have in the products you sell. You get a bigger bundle of both when the spark plugs you sell are Autolite. And the ads you've seen so far this year are only the beginning. Get with Autolite and hitch on to a rising star. **Some things you'll like about Autolite Spark Plugs.** First thing you'll like is the way we build our spark plugs. Double-heat-sealed to prevent compression leakage. How about Power Tip design, the first spark plug that cleans itself while you drive? We make Power Tip Spark Plugs for all overhead valve engines. And that includes more than 95% of the cars on the road today. **We know you have stocking problems.** Obviously, carrying more than one brand of spark plug creates a problem for you. Increased inventory investment. Let us solve it. The line of Autolite Spark Plugs is designed to give excellent market coverage with only seven different types on your shelf. With these seven types, you have 95% of the market at

your fingertips. **Our research department is going strong.** There are several good reasons behind our belief that we make the best spark plugs on the market. Heat-sealing for one. Our development of the resistor plug and the Power Tip design for two others. These new developments came first from Autolite. You can count on more of them in the future. **Our Tab Program is a bigger bargain than ever.** Yes, you can still get valuable premiums free for Autolite Spark Plug box tops. All you do is tear off and save every part number end tab. With everything we've got going to help you sell, they should mount up fast. Your Autolite supplier will be glad to give you a catalog of all the free merchandise we offer. **What's our point?** Just this. There are a lot of new reasons why selling Autolite Spark Plugs is much easier and also more profitable these days. They add up to one very big point: getting with Autolite might be one of your wisest decisions of the year.

If you're still undecided, why not get in touch with your Autolite supplier. You'll find he's a mighty persuasive fellow.



AUTOLITE

Minimum Wage Continued from page 78

Large Repair Shops—Yes, if you gross more than \$1 million a year and receive more than \$250,000 in goods through interstate commerce for resale a year. Shops in a chain which gross more than \$250,000 each, if the chain as a whole takes in more than \$1 million, are covered.

Service Stations—Yes, if you take in more than \$250,000 a year, you will be required to pay the new

minimum wage to all workers, but you will not have to pay mandatory time-and-a-half for overtime. (Government estimates 86,000 service station employees will now be covered.)

The new law sets two systems for raising the minimum wage, one for firms previously covered, another for firms which will be covered for the first time when the new law goes into effect Sept. 3. If

you are covered, these are the pay scales you will have to follow. If not, these are the pay scales which will put pressure on firms for hikes.

For firms covered for the first time, the law requires all employees to be paid \$1.00 an hour on Sept. 3, to be raised to \$1.15 in 1964, and to \$1.25 in 1965. Overtime pay will not be required until 1963, when it will be mandatory after a 44-hour week. In 1964, overtime will be required for more than 42 hours, and for more than 40 hours in 1965. (Overtime, of course, does not apply to gas stations.)

Firms previously covered will have to raise their lowest-paid worker from \$1.00 an hour to \$1.15 in September, and to \$1.25 an hour in 1963.

If your firm is covered, there are some other provisions of the new law which may apply.

* Commission employees, are exempt from the overtime require-

Radiator Servicing Profits Now Greater Than Ever!

NEW INLAND 1-Piece Radiator Shop



**3 ESSENTIAL UNITS
COMBINED INTO 1**

Inland's newest unit makes radiator servicing more profitable than ever. Reduces your initial cost by combining the Flo-Test Machine, Hot Cleaning Vat and Test & Repair Bench into one complete radiator department. Enables you to do the entire Testing, Cleaning and Repairing job. Compact. Saves steps.

LESS SPACE REQUIRED! Complete unit is only 11' 7" long, 3' 6" wide.

LARGE CAPACITY! Handles all car, and many truck and tractor radiators.

VAT FEATURES! Solution agitator speeds radiator cleaning. Automatic Timer turns heat OFF at closing time, turns it ON at any pre-determined hour so solution is hot when you arrive for

work. Even turns it off-on week ends.

OPERATING COST IS LESS! A full time operator is not needed. One of your present employees, in only a part of his time, will produce good additional profits with no increase in overhead.

WE TRAIN YOUR OPERATOR! Our free factory school quickly makes your man a professional radiator repairman.

BIG PROFITS SERVICING RADIATORS! Users report: "\$900 first 30 days!" (Ills.) "\$4,500 in 6 months!" (Pa.) "\$18,000 first 9 months!" (Cal.) The market is growing. Many radiators need cleaning. The hourly return is high. Inland's national advertising helps you.

WRITE FOR NEW 32 PG. BOOK

Shows equipment, prices, training course, Pays-For-Itself purchase plan and experiences of other operators.

INLAND MFG. CO.

1108 Jackson Street
Dept. MA6, Omaha 2, Nebr.
World's Largest Manufacturer of
Radiator Servicing Equipment

INLAND MFG. CO., Dept. MA-6, 1108 Jackson St., Omaha 2, Nebr.
Please send free 32-pg. book describing new 1-Piece Radiator Shop, training school, prices, etc.

FIRM _____ (PLEASE PRINT)

ADDRESS _____

CITY _____ ZONE _____ STATE _____

BY _____ TITLE _____

If dealer, make of car sold _____

Are you now operating a radiator Dept.? ☐ Yes ☐ No



ment if more than half their salary comes from commissions and their income averages at least \$1.50 an hour. Service and parts salesmen may come under this rule in some shops.

*Student workers, who are hired in service or retail operations, may be paid less than the minimum wage and not be required to earn overtime pay IF they are in jobs not ordinarily given to full-time workers. But to qualify, a firm will have to obtain a special certificate from the U.S. Labor Department. They must be attending school full-time.

Continued on page 123

Vehicle Inspection Continued from page 112

state-operated garages should handle the work as is done in some states and municipalities. There was considerable opposition to the idea of letting private garages do it, on the theory they would find non-existent troubles in hopes of getting the "repair" job.

This fear has never materialized, or at least there has been no public outcry in the years since the law took effect.

The law requires annual inspections at a cost of \$1.25, \$1.00 of which is retained by the garage and 25 cents taken by the state to cover the cost of inspection stamps—which are affixed to front windshields—and administration costs. A division of the State Police administers the law.

A total of 1,300 garages in West Virginia are licensed to handle inspections, 975 so-called public stations and 430 fleet stations which handle only the vehicles owned by the company which operates the station—such as a trucking line or dairy firm. Any firm with 10 or more vehicles may qualify to run a fleet station.

To be licensed by the state, a garage must have at least one inspector mechanic and one regular mechanic. Inspector mechanics qualify by making a passing grade on a state-given test, while there are no special qualifications for the second mechanic.

Public stations also must have at least 600 square feet of floor space including the inspection lane, plus additional space for repairs and adjustments. They must also have an entrance with free access to a street or highway.

All vehicles that require state registration tags must be inspected with the exception of house trailers, T-trailers such as are used for hauling motor boats, "antique" motor vehicles used for exhibition purposes and special equipment like well-drillers which are moved only incidentally on highways.

Initial inspections were staggered over a number of months in 1955-56, according to license numbers, with re-inspections slated the same month as the initial one in each succeeding year.

Safety Is The Watchword In Commonwealth Of Va.

Richmond, Va.—Twice during the next 12 months each of the estimated 1.5 million motor vehicles registered in Virginia will undergo an inspection required by the state. The reason: Safety.

"Nobody likes to spend money on car repairs," says Hiram M. Smith, Jr. of the Governor's Highway Safety Committee. "But mechani-

cal defects will cause accidents."

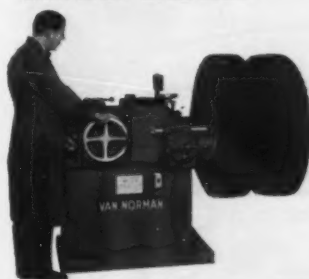
Smith said the state has appointed 2,041 service stations and garages to look over the Old Dominion's cars and trucks and issue inspection stickers. Motorists are charged a maximum of \$1.00 per vehicle.

Mechanics and station operators are supervised by the State Police, who watch for shoddy work, estimates of repair costs that are out of line and "blackmarketing" of inspection stickers.

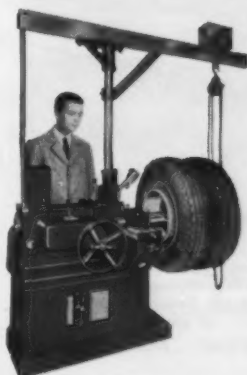
Continued on page 122



No. 302
"Little Brute" Drum Lathe



No. 304H
"Super Duty" Drum Lathe



No. 404
"Speedy Brute" Drum Lathe

Van Norman BRAKE DRUM LATHES

Turn and Wet Grind Drums
IN ONE OPERATION
for better brakes
and EXTRA PROFITS

You offer customers more value for their money—when you feature the advantages of wet ground brake drums. Van Norman pioneered brake drum grinding—and these massive, rugged, fast machines cut and grind brake drums in one operation . . . for pleasure cars, light and heavy duty trucks.

Here are some of the extra features:

- Wet Ground Finish—for longer brake lining life.
- No threading action of shoes—no "noisy brake" complaints.
- No free follow-up brake adjustment necessary—saves time for customer and cuts your cost.

For full details on any of these profit-producing brake drum lathes, contact Van Norman now.

QUALITY IS THE REASON—
IT PAYS TO VAN NORMANIZE

VAN NORMAN
Springfield 7, Massachusetts
A DIVISION OF VAN NORMAN INDUSTRIES, INC.



Vehicle Inspection Continued from page 121

Brakes and lights cause the most trouble, according to Smith. Other equipment on the check list includes mufflers, horns, steering gear, mirrors, windshields and other glass, exhaust lines and tag mountings.

Smith said privately owned stations are appointed to perform the inspections because of the size of the state and the number of motorists. Some smaller states operate their own stations for the

purpose. The appointments in Virginia are much sought after.

"There's generally something wrong with a car," Smith says, "even if the motorist doesn't notice it. It means a lot of business."

But motorists who do not wish to have any necessary repairs done at the inspecting stations can get a "rejection sticker" which gives them seven days to get the work done elsewhere.

Virginia's inspection law was

first passed in 1932. Surveys had shown that mechanical defects were causing a substantial number of accidents and that motorists were not participating in a voluntary inspection program started by the state.

Law Changed

The first law specified a month in the spring and another in the fall in which all inspections had to be undergone. But in 1959 that provision was changed by the General Assembly to allow the motorist himself to pick the month in which he has his car inspected.

The motorist takes his car to an appointed station at his convenience and the sticker he gets indicates that he must have the vehicle inspected again six months later. The new system relieves crowding at inspection time.



In 12 oz. spray cans
2 oz. and 8 oz. tubes

Highest in SILICONE content,

4X does the best job of keeping moisture out of plugs, distributor and wire harness. Also prevents sticking, squeaking, freezing of weatherstripping... corrosion of locks, antennae, battery terminals. Recommended by auto makers. Accept no substitute... at any price.

Specify 4X SILICONE... from your jobber.



Dow Corning CORPORATION
MIDLAND, MICHIGAN

Calendar of Coming Events

June 15-17—IGO of California Annual Convention, El Dorado Hotel, Sacramento, Calif.

June 28, July 1—IGOA Annual Convention, Lowry Hotel, St. Paul, Minn.

July 23-28—National Congress of Petroleum Retailers, Inc., 15th Annual Session, Cosmopolitan Hotel, Denver, Colo.

Aug. 4-5—IGO of South Carolina, Inc. 2nd Annual Convention, Jack Tar Hotel, Greenville, S.C.

Aug. 18-20—IGO of North Carolina Annual Convention, Sir Walter Hotel, Raleigh, N.C.

Sept. 13—American Petroleum Institute Div. of Marketing, Lubrication Committee Meeting, Traymore Hotel, Atlantic City, N.J.

Sept. 13-15—National Petroleum Assn. Annual Meeting, Traymore Hotel, Atlantic City, N.J.

Nov. 8-10—Automotive Parts Rebuilders Assn. Convention & Trade Show, Hotel Biltmore, Los Angeles, Calif.

Feb. 3-7, 1962—National Automobile Dealers' Assn. Convention & Exhibition, Convention Hall, Atlantic City, N.J.

Feb. 28-Mar. 3—International Automotive Service Industries Show, Navy Pier, Chicago, Ill.

Mar. 22-25—Pacific Automotive Show, Memorial Coliseum, Portland, Ore.

Dealer News

Continued from page 35

tion and only 27 per cent for gasoline. Of course the cost would differ with other models.

. . . .

Are you letting your customers know what labor costs include? Many dealers around the country are placing notices in their service departments which spell out exactly what goes into the bill "for the service of a qualified service technician." Some 18 items are covered, which include everything from taxes and insurance to office and service tools and equipment. "Many customers have the mistaken idea that the only cost involved in repairs is the cost of the mechanic's time," points out the South Carolina Dealers Assn.

. . . .

The average death rate in states which do not have vehicle inspection programs is 13 per cent above the national average of deaths per 100 million vehicle miles of travel. That's one of a few sad statistics pointed up in a new booklet, "Why Motor Vehicle Inspection," put out jointly by the Auto Industries Highway Safety Committee and the American Association of Motor Vehicle Administrators. According to the booklet, areas requiring inspection show significantly lower insurance premium rates than those without a check. The Automotive Service Industries Assn. recently launched a drive to get the 32 remaining states to pass some form of vehicle inspection.

. . . .

"What is your advertising dollar doing for you?" asks the St. Louis Auto Dealers Assn. "If you are using it to talk back to your competitors, you're wasting your money." Association urges all dealers to "get off the price tag advertising." After all, you are only competing with your fellow dealers who hold the same franchise. Three out of four customers have decided beforehand to buy your brand of car before they walk in your front door, the association notes. "Why, then, do you slug it out among yourselves only to knock your own profit down?" Makes sense.

Minimum Wage *Continued from page 120*

*Administrative and executive employees, such as foremen, supervisors, and others with some discretion and who suggest personnel policies, or buyers and office workers, are exempt. They must spend at least 60 per cent of their time in these jobs and earn at least \$80 a week for executive employees and \$95 a week for administrative workers.

The minimum wage-hour law requires some detailed record-keeping for firms now covered. The government also has a vigorous enforcement program, which operates generally on complaints of workers or competitors, unions, or others.

Employers covered by the minimum wage law must keep records of each employee, his occupation,

Continued on page 126

Stop Hard Starting and Stalling with STEWART-WARNER ELECTRIC FUEL PUMPS

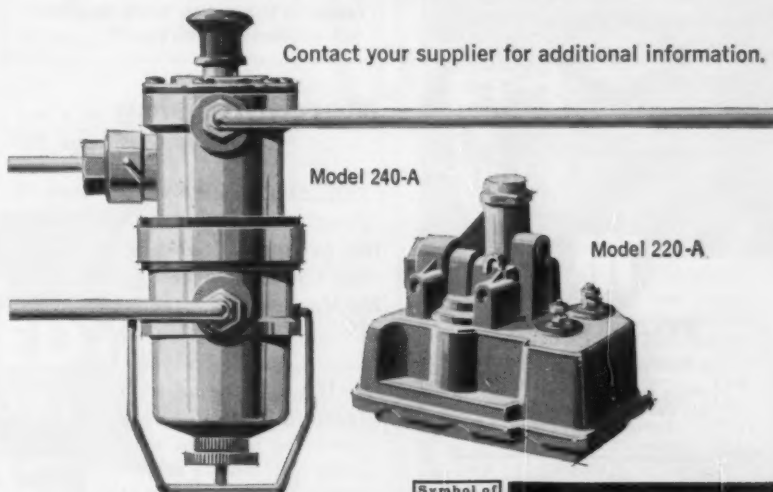
Now you can use the weather for your profit. Help your customers avoid hard cold weather starting . . . hot weather vapor-lock stalls. Recommend and install a Stewart-Warner Electric Fuel Pump. Prevents surging and flooding, assures a constant flow of fuel under all temperature conditions.

Choose the model that fits the purpose best. The high capacity 240-A delivers up to 60 gallons per hour with

pressures adjustable up to 8 p.s.i. A built-in filter eliminates the need for any other filter in the system.

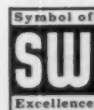
The popular 220 is ideal for use where 20 gallons per hour is the maximum delivery requirement and pressure requirements are not critical. Efficient, dependable, trouble-free. Stewart-Warner Electric Fuel Pumps are available for 6 and 12 volt systems for all gasoline engines.

Contact your supplier for additional information.



Model 240-A

Model 220-A



INSTRUMENT DIVISION
STEWART-WARNER
CORPORATION

Dept. AD-61, 1840 Diversey Parkway, Chicago 14, Ill.

THE MAGNUS METHOD

CHEMICALS
EQUIPMENT
LUBRICANTS
PAINTS
FINISHES

*These specialized
Magnus Products
are NOT available
from your local
Jobber!*

HERE'S WHY:

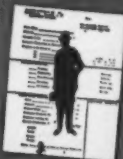
Magnus, unlike general purpose chemical compounders, offers a unique line of specialized products. This assures the most effective results at the lowest cost in each individual operation.

To be sure that you get the benefits of the correct cleaning method for your individual needs, Magnus also employs a nationwide staff of skilled cleaning sales service representatives.

Your Magnus Representative is your key to more effective, time-and-labor-saving cleaning methods.

Like to find out — without obligation — how your cleaning procedures can be improved?

SEND FOR **FREE**
SHOP SURVEY FORM
AND THE NAME OF
YOUR MAGNUS MAN
HE IS AT YOUR SERVICE



magnus

CHEMICAL COMPANY INC.

174 South Avenue, Garwood, N. J.

Please send **FREE** survey form
and name of my Magnus Man.

NAME _____
COMPANY _____
POSITION _____
ADDRESS _____
CITY _____ STATE _____

Alignment

Continued from page 43

fast, accurate alignment. Many installation problems have been solved by the design of this new equipment. In addition to the great savings in space, there is no need for a pit. The rack may be installed anywhere, even on the second floor of a garage. Only two power connections are required, one for the air supply and one for electrical power to the control system.

Features designed to make the operator's task easier include a clear-center front frame which is 41½" wide at floor level and a runway height of just 20" for easier work from a creeper.



Merchandising

Continued from page 117

"you" should take better care of "your" car and psychologically the prospect does begin to feel that the article belongs to him. *Ed Mayover, 1601 14th St., West, (U.S. 41), Bradenton, Fla.*

If you have an idea or suggestion that has paid off in increasing business and profit at your automotive establishment, send it in to MOTOR AGE. You will receive \$7.50 for each idea accepted. Send them in NOW.



NEW LINCOLN 225-AMP WELDER Perfect for small shop!

Here's a welder that can save time and earn dollars for you. With it you can do just about everything—weld mild and stainless steels, cast iron; braze; solder; thaw frozen pipes; hard-surface. Full 225-amp output lets you handle large 3/16" electrodes, big jobs, fast. It helps you hustle work through your shop quickly and efficiently.

Only Lincoln makes this welder which sells for less than \$200 and which will burn 3/16" electrodes.

Costs less than many 180-amp welders.



WANT DETAILS?

Send for new bulletin No. 4610.1. Describes machine and accessories, production and repair uses. Write today. The Lincoln Electric Company, Dept. F-4541, Cleveland 17, Ohio.

**LINCOLN
WELDERS**

The World's Largest Manufacturer of
Arc Welding Equipment and Electrodes

Classified Advertisements

SALES REPRESENTATIVE: National, top-rated auto parts manufacturer and distributor is expanding business and needs capable traveling salesmen, age 25-46, to sell industry's most outstanding line of over 5,000 fast-moving replacement parts, assortments and kits. Earnings \$8,000 to \$10,000 first year, increasing every year. Paid vacation. Complete, in-the-field training program at company expense. All supervisory positions filled from within. No investment required. Write today giving full work history and background. Box 8, c/o Motor Age, 5601 Chestnut St., Philadelphia 39, Pa.

END FILTER CLOGGING

...and costly service complaints with...

MILEAGE MINDER

Clogging filters are today's No. 1 trouble spot on more than 6 1/2 million cars with in-the-line fuel filters. Replacements only duplicate the problem. Your one solution — MILEAGE MINDER, with patented self-cleaning, non-clogging filter.



MODEL MM 200

\$6.95

Compact metal bowl
Model MM 200 M.B.
\$7.85

3380 17th St.

MILEAGE MINDER CO. San Francisco 10, Calif.

The Mechanic's Best Friend!

LIQUID WRENCH

**Loosens
Rusted Bolts
nuts, screws, "frozen" parts!**



The super-penetrating rust solvent that quickly loosens rust and corrosion.

**YOUR JOBBER HAS IT!
RADIATOR SPECIALTY CO.
CHARLOTTE, N. C.**

Dodge's New Motor Home

Continued from page 88

The following equipment is offered: two driving compartment swivel seats, a 30-gallon fiberglass water tank, a 30-gallon septic tank, complete shower and lavatory facilities, a gas refrigerator and stove-oven, a 17,000 B.T.U. thermostatically-controlled gas furnace, table, cupboards, beds and tiled floors.

The units sleep from four persons in the 20-foot home to eight in the 26-foot home.

Other equipment includes 12 and 110-volt lights, kitchen sink, side and roof ventilators, window screens, power steering and brakes, Torsion-Aire suspension, heavy duty accessories, and a complete trailer-park hook-up system.

Gas equipment is operated from two 20-pound LP (low pressure) gas bottles. The bottles are housed at the rear of the unit in a special ventilated compartment.

The Motor Home is completely operational while traveling on the highway. There are no restrictions on children and pets riding in the home while on the road. The family can eat, sleep and relax in the home while it's moving.

The motorized home is licensed in most states as a house car—a passenger vehicle—and travels ac-

Continued on page 126

When a group of people turn up with one opinion you generally find that only one of them is doing the thinking.



... and for

NEARBY SERVICE

on B&D tools

Black & Decker maintains 50 factory service branches plus authorized repair stations to give your B&D tools the attention every mechanical product needs periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.

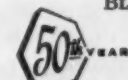


SWIFTY SERVICE says be sure to ask about:

FREE TOOL INSPECTION
no cost,
no obligation.

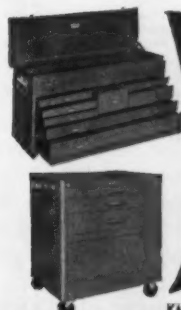
STANDARD B&D GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: **THE BLACK & DECKER MFG. CO., Dept. 5106-S** Towson 4, Md.



Black & Decker

Quality Electric Tools



If you sell tools
You Should Be Selling
KENNEDY
Tool Boxes

★ Write for Complete Catalog

KM22B

KENNEDY MANUFACTURING CO. VAN WERT 6, O.

Pioneer in the Manufacture of Quality
TOOL BOXES, TOOL CHESTS and ROLLER CABINETS

Buy Bonds

Minimum Wage Continued from page 123

hours of work, pay rate and total wages, overtime pay, and deductions for taxes and other purposes. If a firm has workers covered by special provisions, such as white collar workers, seasonal workers or student workers, special additional records must be kept, retained for three years, and be open for government inspection.

All firms covered are required to

display a poster prescribed by the government listing the details of the wage law.

Keep Records

If a firm is covered, records must be kept for all employees.

Special records must also be kept of the goods purchased which come across state lines and of excise taxes just for the minimum wage inspectors.

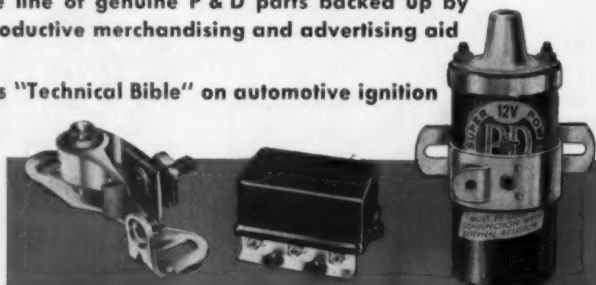
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with the seven BIG features developed by your wholesaler and P & D to help you get, and keep, a profitable ignition tune-up business! The P & D-ize program, unique in the industry because it covers all the points you need—

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- ⑥ Complete line of genuine P & D parts backed up by sound productive merchandising and advertising aid

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STARTING - LIGHTING - IGNITION

19-02 STEINWAY ST., LONG ISLAND CITY 5, N. Y.

Export Sales: Borg Warner International, 36 So. Wabash Ave., Chicago 3, Ill.

Dodge Motor Home

Continued from page 125

cording to the same road rules and laws as other passenger cars.

The units are of glued aircraft-type construction for super strength and light weight. They are completely insulated with special board, foil, fiber glass and vapor barrier for all-weather comfort. Bodies are of shadow crimped, baked enamel, lifetime aluminum. Interiors are in two-tone birch paneling.

The Dodge Motor Home attempts to combine all the enjoyment and pleasure of camping, modern living and traveling. It's a complete home wherever you go, company stated.



New Imported Car Registrations* March

1961	1960
Volkswagen 15,681	Volkswagen 14,740
Renault 3,687	Renault 7,951
Fiat 1,355	English Ford 2,925
Mercedes Benz 1,090	Opel 2,681
English Ford 1,089	Fiat 2,407
Opel 994	Simca 1,627
Triumph 887	Triumph 1,482
Volvo 890	Austin Healey 1,454
Austin Healey 840	Peugeot 1,323
M.G. 731	M.G. 1,309
All Others 6,563	All Others 12,231
Total 34,067	Total 50,910

Three Months

1961	1960
Volkswagen 42,528	Volkswagen 38,224
Renault 8,599	Renault 20,911
Opel 2,959	English Ford 8,548
Fiat 2,762	Opel 7,756
Mercedes Benz 2,596	Fiat 6,477
Volvo 2,278	Simca 4,462
Triumph 2,199	Vauxhall 3,854
English Ford 2,143	Triumph 3,650
Austin Healey 1,676	Hillman 3,505
Simca 1,808	Volvo 3,472
All Others 16,677	All Others 32,639
Total 86,433	Total 133,498

* Compiled from official state records. Data property of R. L. Polk & Co. May not be copied, sold or reprinted without Polk permission.

IN ONLY A 3'X 5' AREA THIS SERVICE SHOP EARN'S \$18,000 PROFIT ANNUALLY



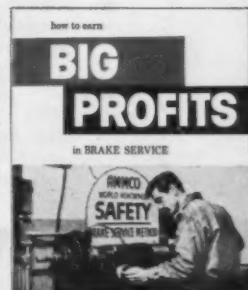
No. 20 Brake-Shop-On-Wheels complete with Drum Lathe, Shoe Grinder, Drum Mike, Brake Hone and other accessories.

**"THE MOST PROFITABLE
AREA IN OUR SHOP"**

Brake Service Did The Trick. Interested in earning \$1,200.00 per square foot? Nunley's Phillips 66 of Indianapolis is doing just that. Recently Burch Nunley equipped his station with an Ammco Brake-Shop-On-Wheels. The combination of Ammco's equipment and a regular merchandising program now brings in 50 brake jobs a month. Requiring just 3 x 5 feet of floor space (space often wasted by empty soft drink cases), the Brake-Shop-On-Wheels helps net a gross profit of over \$18,000.00 per year. The profit on just one complete brake job

a week more than covers the payment on the equipment and brings in a good profit, too. More and more "casual" customers have come in for brake work and have become "regular" customers since Nunley added his Brake-Shop-On-Wheels. This has increased volume and profits in gasoline, oil and TBA items as well as from other mechanical services.

REQUEST THIS FREE BOOKLET—Tells how you can easily increase sales and profits. Write today for **How To Earn Big Profits In Brake Service!**



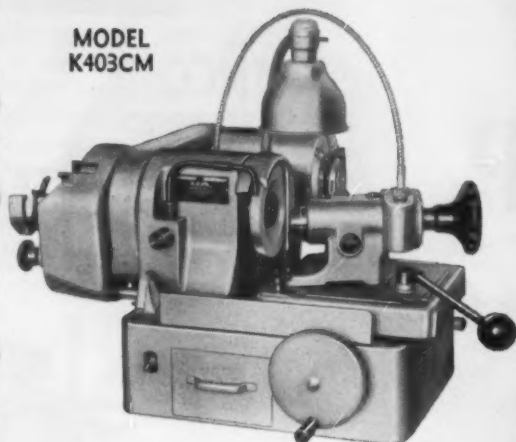
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MODEL
K403CM



That will operate continuously for ten, fifteen or twenty years without a major overhaul, then there is only one machine that you can buy that will fulfill this requirement, that is the K. O. Lee "Lifetime Refacer".

features:

- ★ No shafts, bearings or belts in base to wear or give trouble.
- ★ V-table ways, found only on precision machined tools, instead of round shafts with line contact.
- ★ Trouble-free alternating current motor instead of high speed Universal motors with brushes.
- ★ 5" grinding wheel and ball bearing spindle shaft with automatic take-up for wear.
- ★ Smooth worm-driven workhead that assures chatter-free grind on valves.
- ★ Double-end collet chuck that retains its accuracy after many years of constant use.
- ★ Lever for fast, convenient movement of valve across grinding wheel instead of slow crank and feed screw.

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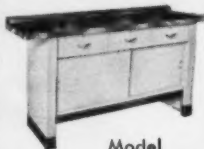
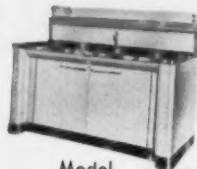
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...and the
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MEAN MORE MONEY IN THE BANK!"**

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- GLAZED • PEELING
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